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University Funding in the 21st Century

Employment Problems Among Management Graduates

Educational Contributions of Maulana Abul Kalam Azad

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University Funding in the 21st Century

C.P.S. Chauhan*

Pressure of Numbers

Wood's Despatch (1854) which is described as "Magna Carta of English Education in India" recommended and led to the establishment of first three Indian Universities in 1857 at Bombay, Calcutta and Madras respectively. During the pre-independence period, the progress of university education in India remained a little slow due to certain sociopolitical reasons. In 1947, the year of Independence, there were 20 universities and 500 affiliated colleges in India with a total enrolment of over 2 lakhs. During the post-independence period which may be described as an "era of higher education in the history of Indian Education" there has been an enormous growth in higher education in pursuance of recommendations of University Education Commission (1948) and Education Commission (1964-66). The rate of growth was as high as 13-14% during 1950s and 1960s, then declined to 4-5% during 1970s and 3-4% during 1980s. During 1990s, the growth rate has stabilized around 4-5%. Now, at the beginning of 1999, the total number of university level institutions is about 240 with 9700 affiliated colleges. The enrolment has also increased from less than 2 lakhs in 1950-51 to about 70 lakhs. The number of teachers also increased from only 21,000 to 3 lakhs (Deshmukh, 1998) during the same period. About 88% of the total enrollment is at the undergraduate stage mostly enrolled in affiliated colleges, and over 82% of the students are pursuing general education. The share of girls in enrolment has also increased from less than 10% in 1950-51 to about 34 at present (U.G.C. Report 1995-96).

These figures indicate that the quantitative expansion of higher education in India has been apparently impressive. We have now the third largest system of higher education in the world. Due to growing demand of higher education, especially among the poor and disadvantaged sections of the society, the major thrust during VIII Plan was on Distance Education. The Indira Gandhi National Open University which was established in 1985, enrolled 1,60,000 students in year 1998 raising its total enrolment to 4.35 lakh (Khan, 1998). With this rate of growth, we are likely to have about 250 universities, 10,000 colleges and a student population of about 75 lakh in higher education, by 2001 A.D.

Financial Crisis

Such a huge and growing system requires increased allocation of funds. Education in India is funded by three main sources, namely, Central and State Governments, local bodies and private sector contribution. Since non-government contribution has been decreasing, dependence on government funds has correspondingly been increasing. Government contribution to educational finance had increased from 57% in 1950-51 to 81.5% in 1983-84. At present, it may be of the order of 90-92. The share fees in higher education has decreased from 15-20% to only 2-3% of the total recurring expenditure. After the inception of the strategy of planned development, expenditure on education as a proportion of the GNP has marginally increased from 1.2% in 1950-51 to about 4% at present. In terms of plan expenditure, the share of education as a percentage of total plan

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allocation also decreased from 7.86% in the First Plan to 2.97% in Sixth Plan, then marginally increased to 3.55% in Seventh Plan. In Eighth Plan, the corresponding figure was 3.7% which was a marginal improvement. However, we are far behind the target of spending 6% of the GNP on education as recommended by the Education Commission (1964-66). The government had proposed to achieve this goal by the end of Eighth Plan but failed. The relative share of higher education in allocation of funds has also declined from 25% in the Fourth Plan to only 8% in the Eighth Plan.

In the case of Central universities, dependence on (Punnayya, 1993) government funds varies from 89% (Delhi University) to 98% (Vishva Bharti) and, the contribution of fees varies from less than 1% (JNU) to 10% (Delhi University). The amount of fees has kept frozen at a minimum level for the last 2 decades and has not been revised upwards in view of the rising costs. Although, government contribution has been increasing, it has not kept pace with the rapid rise in enrolment and escalation in prices. The enormous expansion accompanied by diversification, especially in technical and professional courses, and rise in salaries of employees have increased the demand for funds. There are two related problems regarding resources — overall paucity of funds and inequity in the distribution of available funds among different types of institutions.

Subsidisation

Development of higher education in India has been subjected to many social pressures. The demand for it generally comes from upper and middle income groups. The liberal subsidy of about 90% makes higher education cheap and easily available to these classes. This subsidy is not accompanied by rationing of seats by admission standards. In fact, education in India has been considered as a social service. In a study conducted a few years ago, it was found that beneficiaries of higher education received Rs. 9,750/- crores as subsidy while paying only 1.3% of the total cost of their education. During the mid-sixties, a survey conducted by the N.C.E.R.T. (1971) showed that 80% of the University and High School completers were from the top 20% of the income groups. A similar study conducted by the U.G.C. during 1970's showed that 70% of the university students came from top 20% of the income groups. On the other hand, 70% of the Government revenue came from indirect taxes which was paid by all citizens, of which 60% were living in poverty (Mitra, 1993). The heavy subsidization of university education (about 90%) by the government means that university education is acting as a 'via-media' to transfer scarce resources from the poor to the rich. Though, we cannot ignore the fact that education is a social responsi-

bility, yet, the level to which it needs to be subsidized leaves an open question to debate upon.

Issues

Due to negligible cost the beneficiaries of higher education are not bothered about its quality and pick up promptly what is available free. The beneficiaries don't even bother to contribute something to educational funds. Consequently, the available government funds are spread thinly over larger numbers and wider areas. This obviously has adverse effect on quality of education. In the case of higher education, there is negative correlation between quantity and quality when there is financial crisis. During the last five decades, the academic standards have been allowed to deteriorate in order to accommodate growing pressure of enrolment.

The amount of fees was kept frozen and low in higher education in order to democratize it and equalize opportunities to benefit from it. Due to monopolization of seats by the well-to-do, the major part of the subsidy is going to those who do not need it. Another paradox is that the more expensive the course (such as medicine, engineering and management), the larger the subsidy (Balachander, 1993). A graduate in general education (arts, science and commerce) receives a subsidy of 86% and a graduate in professional and more profitable courses, receives a subsidy of over 90%. This goes against all the basic principles of equity and social justice.

About 60-70% of the non-plan expenditure in the universities is claimed by salary bills of teaching and non-teaching staff. Moreover, 75% of the total salary amount is shared by non-teaching staff. On an average, there are 3 non-teaching employees for every one teacher. In some central universities (Punnayya, 1993), this ratio is 5 : 1. The amount left for developmental activities is only about 15% of the total non-plan budget. There is a wide gap between the funds given to Central and State universities. At present, 19 Central universities and Institutions of National Importance claim about 71% of the total annual budget of the U.G.C. (Powar, 1996) and only 29% is available to all the State universities and affiliated colleges. A State university gets about 1 crore from the U.G.C. for a period of five years.

During the past one and a half decade, the sectoral priorities of the government have also changed. The share of elementary education was 56% of the total allocation for education in the First Plan which decreased to 30% in the Fourth Plan and then increased steadily to 47% in Eighth Plan. On the other hand, the share of higher education increased from 9% in the First Plan

to 25% in the Fourth Plan and then decreased sharply to 8% in the Eighth Plan. This shows that the priority of the government has shifted from higher education to elementary education after Fourth/Fifth Plan. It has been argued that higher and technical education had received unusually strong financial support, and to some extent, at the cost of elementary education.

A Case for Performance based Funding System

In view of the resource crunch, public funded enterprises, such as higher education should be answerable to tax-payers, who provide funds. Cost-effectiveness cannot be achieved without assessment of performance in relation to set objectives. Financial assistance to universities should be based on vigorous assessment of their performance. The present "Covering the deficit" approach of university funding discourages savings, economy or generation of internal funds. Since institutional performance is not considered in determining grants, the quality and standard of education are deteriorating.

Bhatnagar (1992) conducted a study of performance of universities in terms of J.R.F. awardees based on N.E.T. examination conducted by the U.G.C. It was found that 12 universities showing the best performance including only two Central universities — JNU and Delhi University. Two other Central universities — AMU and BHU were among those which performed poorly. These two universities claimed a grant of Rs. 95 crores out of the total grant of Rs. 182 crores (1992-93) distributed among Central universities (UGC Report, 1992-93). It is here that accountability and cost-effectiveness come into picture. The basic question is — can we continue to finance under-performance?

If at all, we are interested in rationalizing the funding pattern of universities, their performance should receive greater weightage than anything else. The level of performance in a given year, should determine the grants for the next year. A superior or at least an improved performance should be rewarded in terms of increased grants and poor performance or a deterioration in it should lead to cuts. If this strategy becomes operational, the institutions will compete in improving quality and efficiency of work in order to attract increased funds. Such an approach will provide a great set-back to nepotism, regionalism and parochialism which are rampant in most universities.

Role of NAAC

National Assessment and Accreditation Council (NAAC) which was established at Bangalore on Sept. 16, 1994, is a body set-up by the U.G.C. to evaluate the

performance of universities. The main objectives of NAAC are : to grade institutions of higher education and their programmes, stimulate the academic environment in these institutions, help the institutions in realizing their academic objectives, promote changes, innovations and reforms necessary for the above purposes. This would encourage self-evaluation and accountability in higher education.

The NAAC should recommend increases or cuts in the grants of the universities every year on the basis of performance assessment. The main criterion for assessment of performance may be : number of students selected in I.A.S. and other prestigious services, number of students qualifying the N.E.T. examination conducted by the U.G.C. for the award of scholarships, number of students qualifying for appointment as Lecturers through National Eligibility Test conducted by the U.G.C./C.S.I.R., number of research papers published by the faculty members in reputed national and international journals, books of high quality published by teachers, number of research projects undertaken/completed/continuing during the preceding years, amount of funds generated from other sources, the quantity and quality of research out-put, the quality of newly appointed/promoted teachers, efficiency in conducting teaching, research and evaluation work, and the degree to which U.G.C. guidelines/norms are followed in all matters of academic pursuits.

The NAAC can play a significant role in the management of scarce funds available for education by stopping misuse and wastage. This will be a great service to poor masses of the country who finance higher education through indirect taxes.

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Employment Problems Among Management Graduates

Ajay Prasher*

Introduction

Unemployment, a serious social problem, is spreading fast in almost every sphere of society. The disciplines which offered ample employment opportunities yesterday have also come under the shadow of the unemployment today. For instance, a degree in library & information science could get a well paid job 15 years back, but not now. Biotechnology has met the same fate. A degree in business management similarly could get a lucrative job of one's choice some five years back but now MBAs are hunting for jobs. Slow pace of socio-economic development in India on one hand and population explosion on the other is the reason for this malaise. Churning out sub-standard professionals by most of Indian institutions of higher learning have made the problem serious. Unemployment among the professionals is certainly a cause of worry because a lot of public money is spent on them.

In the field of business management, due to the AICTE's liberal policy, a large number of B-schools have been set up by private entrepreneurs. Though these are designated as management institutes, most of them are teaching shops only. Some arm-chair experts had estimated the requirements of a large number of management graduates in the years to come and had recommended the opening up of more B-schools to cope up with the problem. This expert opinion gave the AICTE an excuse for permitting the rich private parties to start B-schools and conduct PGDBM Programme. Most of these privately managed B-schools are without proper faculties and infrastructural facilities. Since PGDBM could bring a lucrative job, there was a mad rush for admissions. This situation was fully exploited, and good and bad aspirants were admitted by these teaching shops after charging heavy fees. Though it was the statutory responsibility of the AICTE to ensure proper standards of management education in these B-schools, hardly anything was done. With no real check, and no responsibility to maintain standards, these B-schools produced half-baked managers. Such good-for-nothing managers were

not acceptable to the corporate houses or industry. Though some among these B-schools did produce quality managers and had no difficulty in placing them in well-known companies on reasonable compensation, a majority of these B-schools could not do that. There was thus a problem of unemployment among the management graduates. The pages to follow discuss the dilemma of a Placement Officer in finding a placement for the management graduates of such institute.

The Problem

'How many students you have placed so far'? How many companies have you visited? These questions to a Placement Officer of an average management institute make him uncomfortable and he finds it difficult to give suitable answers. He may take shelter behind such beaten and familiar terms as 'deep recession', 'no demand', 'delaying', 'retrenchment', 'golden handshake', etc. He may also cite suitable instances to bring out the main culprits responsible for the unpleasant situation. his predicament can be understood by the following :

- 1) Job scarcity as reported in the current journals and magazines through facts and figures.
- 2) Desperation of impatient job-seeking fresh MBAs who have spent considerable money on training and who now find their MBA degrees having no value for procuring suitable or gainful employment.
- 3) Difficulty of a Placement Officer to achieve much in his allotted assignment due to the prevailing circumstances in job market. And his future prospects are in jeopardy as a consequence.

The Cause

The poor performance of the economy always affects every aspect of life. Companies forming a part of the prevailing economy face such problems as : shortage of demand, shrinking markets, tough competition, etc. Consequently they find it difficult to cope with the supply vis-a-vis their production capacity. Idle capacity of production units contributes to the negative growth of the company and dwindling profits.

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To save the situation from further deterioration, drastic measures are taken by the companies to cut their expenses. Wages, as a fixed cost, always share a higher proportion among the major expenses. These expenses are the only one that can be reduced with ease, without any depreciation losses. This can be done : (1) Through golden handshakes, (2) Retrenchment of the present employees, and (3) Suspending the intake of new personnel. This mode of golden handshake in the recent times has gained much popularity, being the one which affects least the goodwill of the company in comparison to other such means as 'retrenching' or 'laying off after paying a salary of few months'. Also golden handshake is more humane and is a graceful exit because it saves the employee's image and does not affect his future chances to seek another suitable job or assignment. Whatsoever is the mode of reducing the staff, it proves the point that there is scarcity of jobs in all spheres and the problem of unemployment or under employment remains in India. Management graduates are also effected like others.

Excessive Supply and Keen Competition for Jobs

Ever-growing number of business schools in the country is the main cause for creating a glut of management graduates in the market. Over-supply of MBAs has made it a sellers' market, and the employers are now dictating their terms by :

- Offering lesser salary than what the norms would permit,
- Making to work for longer hours,
- Retaining job insecurity, and
- Exploiting the situation to the disadvantage of employees to the fullest.

On the other hand the bulk supply of MBAs has made the competition keen at the entry level. Even the scenario at the walk-in-interview level is horrible. For a few positions a large number of candidates turn up, and if job is offered they join at the terms the employers dictate. Two types of candidates usually come forward to offer their services in such cases : (1) The freshers who are seeking the first break, (2) The job hoppers, who are dissatisfied with their existing assignment for want of better salary, promotional avenues, perquisites, etc.

As per the existing situation, the number of job-hoppers is more than the number of first job seekers. This makes it difficult for the freshers to get their first break as the employers normally prefer the candi-

dates with some experience. Competition is really tough for the freshers.

Uneven Distribution of Job Opportunities

A popular thinking among the fresh management graduates is that if anybody wants a job, he/she should go to Delhi or Mumbai. It is because most parts of the country are industrially under-developed and job opportunities are not evenly available. Even if some jobs are available in the under-developed regions, they are poorly paid, and compensation may be equivalent to that of a peon of any metropolitan city. Consequently more pressure of the job seekers remain concentrated in a few major cities, making the job opportunities there even more scarce. The ever-decreasing job opportunities further make the situation worse. This situation is likely to continue till economy booms and generates more jobs bringing in sufficient employment opportunities. But the criticality of the situation is that a candidate cannot wait till that time, he needs the job today.

Why Top B-Schools Succeed

Job has a direct relation with the quality of the candidate. Today more and more organisations are gearing up for tomorrow's competition. To them quality does matter, and more so of the human resource. India's premier management schools, such as IIM's, FMS, XLRI and others, had realised it at an early stage. They know that if their product has all the characteristics that an employer wants, it will not only sell, but will earn a premium too. To ensure this they follow the following guidelines :

- (1) Admitting quality stuff only which they ensure through a tough and rigorous admission procedure,
- (2) Providing modern infrastructure like well-stocked library, well-equipped computer centre, and ensuring superb round-the-clock service of these,
- (3) Teaching through well-qualified, experienced, and motivated teaching faculty with a positive and supportive attitude,
- (4) Imparting education which is based on well-defined, developed, upto-date and need-based course curriculum fulfilling the present day requirements of the industry,
- (5) Adopting innovative approach in teaching methodology, and using case studies, role plays, etc modes for giving a clear understand-

ing of basic concepts and their effective implementation, and

- (6) Ensuring a balanced approach of theoretical learning and practical exposure by associating the student in various research projects in the real life situation of industry, and thus sharpening their decision making capacity.

The products of top business schools, as some surveys reveal, may lack in the leadership qualities, team spirit, art of working in groups, loyalty to the company employed in, and sticking to the job for long. This notwithstanding, their high class training, excellent communication skill, analytical thinking, and business knowledge make them the most-sought-after candidates, and really hot favourites of India's finest companies. The top B-schools have the resources and infrastructural facilities to provide excellent training to their students. The output of top-B-schools is in fact value added and bears the better capacity to take on the present competitive challenge as compared to those who pass out from other B-schools. They, therefore, grab all the prized employment opportunities in preference to their counterparts from other B-schools. The latter have neither the resources, nor competence, nor will to challenge the top B-schools. The better one, therefore, succeed.

Placement of Products of General B-Schools

In the present scenario, when there is already over-supply of the management graduates, there is an urgent need for the rationalisation in our approach towards placement work. A time suited strategy needs to be positioned in an appropriate way and a lot of homework needs be done prior to setting our sight at the outside world.

In the context of the placement, the elements worth considering are : (1) What we have to offer, (2) To whom it is to be offered, (3) How it is to be offered. As regards the candidates from an average B-school, to be placed, we may also remember that we are dealing with the degree holders who are : (1) Highly ambitious, (2) Poor at fundamentals, (3) Average in communication skill, and (4) Lacking in confidence. Under these conditions it is certainly a tricky task to find an appropriate way to present for placement the products of general B-schools. In view of limited number of positions and large number of candidates, the rejection probability is likely to be high. It is, therefore, desirable to contact as large a number of potential employers as possible. Two ways can be

used to contact them : (1) Through mail correspondence, and (2) Through personal contacts or meeting.

Prior to this it is a must to develop a directory of companies who possess higher potential of growth. Keeping the candidates in view these should be carefully screened. Then with the selected companies the correspondence is initiated in such a way as it highlights the B-schools products. The correspondence should be such as it must result into some positive results from other side, if not from all of them, at least from few of them.

While dealing with the prospective employer, it has been practically observed that the personal contacts bear better fruits than what is achieved through the correspondence. A personal contact, however, requires to keep a few things in mind : (1) Meeting the key persons only, and (2) Presenting only those biodatas, which have been either short listed by the company, or which fit the nature of jobs the company wants to fill up. For instance, the biodata of a candidate with engineering background is more suitable for a company dealing in engineering goods and as such the candidate has better chances to be accepted there.

It is important to be brief while presenting the salient features of the management institution one represents, its methods to admit students, and its ways to impart education to them. Placement Officer should have a complete knowledge about other important facts about his institute and its programmes. The following points should be kept in mind :

- (1) Must ensure what you present is a fact, and do not forget to tell how you are better than others.
- (2) Carefully listen the other side of the table and choose only to say what justifies the answer the most.
- (3) Be mannered, and polite, leave a long lasting impression, and develop a kind of personal relations beyond the scope of placement activity.

Above steps may take more than two or three meetings but sincere and persistent efforts would lead to a more positive response.

Whom to Approach

Normally a renowned company has its well-developed recruitment cell. Round the year, it

keeps on hunting the talents across the nation. Their selection standards are set and they do not compromise on quality on any ground, even on humanitarian one. So it is appropriate to establish contacts with the chief of recruitment cell, to find out his requirements, and to offer and present the proper candidates to meet these.

For the products of an average B-school, it is rather appropriate to contact lesser known companies, which are expanding and growing. Very small companies have usually a centralised controlled system, with one man show, who hardly believes in delegating his workload or responsibilities, and thus leaving little scope for a fresh management graduate to learn and grow. It is always beneficial, therefore, to continue to search for the lesser known companies with a high growth potential. Chances to grow monetarily as well as upwardly are bright and the freshers here have an ample scope to learn by experimentation. The Managing Directors or Chief Personnel Officers of these latter companies can be contacted for initiating the placement proposals.

The Presentation

Presentation is an important stage in placement efforts. The following tips may prove useful in making the presentation successful :

- (1) Must have prior appointment with the executive with whom matter is to be discussed.
- (2) Some lead from other known persons about the company, its staff requirements and of related matters may prove useful during the course of presentation.
- (3) Presentation must be convincing and should have valid reasons to support the stand taken.
- (4) How the student will participate in the growth of the company, and how it will be possible, with the kind of education he/she has received at the institute, need be emphasised.
- (5) Each and every doubt of the employer needs be given prior thought so that it is convincingly answered. The employer may raise such questions as lower stability, demand of higher salary, ego problem, leadership skills, prior experience, high touring capacity, etc. These must be effectively and adequately answered in such a way as to convert them into employer's satisfaction.

- (6) The presenter himself should be knowledgeable, well-dressed, mannered, and be able to respond on the same wave length. It is because this impression would produce the image of the kind of students he is going to present.
- (7) It should be a brief meeting, but should not be too brief. The meeting should end on a happy note with a mutual agreement of the next round of meeting at a particular time.
- (8) A deserving candidate, who is smart, intelligent and well-mannered can also be taken along to create a positive impression on the company executives.

Appropriate presentation leaves a positive impression on the company and it is beneficial if not today then the next time. That is the key to the long lasting relations which the concerned B-schools should establish with the company.

The Follow-up

Any laxity in follow-up may lead the other B-institutes to enter your den and snatch the opportunity. The following steps may prove useful to prevent that :

- (1) Carefully note down the requirements of the potential employer, such as detailed biodata of the proposed students and their specialisations and interests.
- (2) Despatch of these details at the earliest to the company enabling them to finally shortlist the candidates.
- (3) Finalise the dates for interviews as mutually convenient and at agreed locations according to the terms already discussed.
- (4) Confirmation of interview schedules to the students and the company through fax, letters, notice board, or by personal contacts.

Since the follow-up is as important as the presentation part, it should be given due importance.

Preparing the Students for Interview

Before the students are presented for interview, they should be told about the useful tips which they should keep in mind while facing the interview committee. They should be aware of the do's and don'ts of facing an interview. They should also be informed about the present job scenario. They should be advised to prepare a good biodata, containing all the relevant information. The fol-

lowing may also be advantageous for the candidates for their placement :

- (1) Extensive counselling to make the students realise what is important for them in life, particularly in the initial formative years.
- (2) Mock interview sessions.
- (3) How to be a patient listener and an intelligent responder.
- (4) How to ensure rationalisation in the answers.
- (5) How to create overall positive impression on the selection board.

Who Will Win Ultimately

Placing a student for the first time may be traumatic experience, because the represented B-institute has :

- (1) Not been known earlier to the prospective employers or companies,
- (2) No brand equity,
- (3) No peers (unlike the established ones) who can support your case.

The above notwithstanding, if you somehow

manage to place your students in the companies, then your future would depend upon :

- (1) Their performance
- (2) Their hardwork, and stability
- (3) Their interpersonal relations, and
- (4) The overall impression they create of themselves among their colleagues and superiors.

The above depends upon the general and academic background of the student and the quality of education and training that has been imparted to him by the B-schools. A knowledgeable student may substantially contribute to the growth of the company but an average boy would only become a routine worker. Today's philosophy of the established organisations of "Up or Out" requires the quality stuff only. In the long run only the quality students will sustain. If the B-school fails to provide quality products, its chances of the future placement are doomed. Next time companies may ignore the products of that B-school, and consider the graduates of those known B-schools which maintain high standards and are wedded to quality. The dilemma of the Placement Officer shall then continue. □

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Educational Contribution of Maulana Abul Kalam Azad

Bano Sartaj Kazi*

Education is the process of the perfection of the mankind. Education is for the comprehension of life, enlightenment of the people. According to Russel, 'education is not only the process of the transmission of external information but it aims at the broad cultivation of the mind leading to an awareness of man's place and destiny in the society and in the universe.' Whitehead says 'mankind is born for action, it is the very breath of his life that he should be doing something. The aim of education is the marriage of thought and action — that action should be controlled by thought and thought should issue in action'. Plato in 'Laws' writes, 'I consider education as that, which would the natural propensities of children to good habits, when he does not distinguish between happiness and misery and between friendship and hate. Education should develop a kind of reason in children in order that they may feel a harmony between the soul and the various things of the world. This harmony is the true virtue. Only that education can be regarded good which teaches the child to love that which is good, and to hate which is bad'.

In view of the above, contribution of Maulana Abul Kalam Azad is worth studying.

Abul Kalam Azad was one of the leaders who after independence wanted to bring complete change in the educational philosophy, educational policy and educational process of India. The main aim was to prepare the children of independent India not only to retain freedom but also to take it to the highest peak of development. He in the capacity of Education minister laid the foundation of the educational system prevailing in today's India. Very few changes were made in the system after him. The present educational policy of the country is the result of educational thoughts of Azad. In his own words, 'I have never tried to find the footpath of another but have brought a path for myself and left my footprints for those who are to come'.

Abul Kalam Azad is more known in the domain of politics, but his contribution in the field of education is remarkable. He had a strong scheme of education. He was a philosopher in the sense that he had reasoned out views on the reality of life, on the individual and on the society. He was not a systematic philosopher of education but his contribution to education is substantial. His ideas were of tremendous

weight and prestige. Azad had something of a writer in him. His writings are intensely charming. He was one of the creative minds in the field of education. His educational thoughts form the dynamic side of his philosophy. His educational philosophy includes all the essential elements which a good education should possess.

In *Ghubar-e-Khatir*, the prestigious work of Azad, he recalls his early education as — '...a traditional and outdated programme... outdated from all points of view... from the point of view of subject-matter, selection of the textbook and teaching methods'.

At the inaugural function of the Madrasa Islamia, Calcutta in 1920, Azad in his speech said, "Government education in our country has seriously damaged our national and cultural heritage. The greatest loss is that we have forgotten the real aim of education. Education is a boon, and we should receive it only for the sake of education. Present educational institutions are leading us in wrong direction. They are imparting education for making men able to get government jobs. Education today is narrowly aimed at economic gain. Do you think that these huge buildings which are called educational institutions are full of people who loved education and who really want to be educated? No, not at all. These institutions are full of students desirous of getting jobs. They are made to think that without education they cannot succeed in getting jobs."

Azad, from the beginning was opposed to the education which narrowly aims at material gain. He in the preface for Dr. Radhakrishnan's book "History of Philosophy: Eastern and Western", expressed dissatisfaction about the aims of education, by saying, 'combination of both eastern and western education can promote individual and social development. Professional efficiency or economic gain or making able to earn livelihood is one of the aims of education but the real aim of education is the harmonious development of the individual and building of personality in a new way.'

After independence, while deciding the educational policy of the country two theories came forward. Mahatma Gandhi was in favour of upliftment of villages through village industries. He wanted to start work from the villages. On the other hand Jawaharlal Nehru favoured the education of science and technology. Azad realised that science and technical education is very important for the growth of the modern industrial society but he also stressed that education should be connected to the study of art. He was in fa-

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your of the combination of classical eastern religious education with modern western secular education. He strongly stressed the inclusion of science and technology in the curriculum of religious institutions specially in the curriculum of Deeni Madaris (muslim religious schools).

Azad's educational policy can better be defined by his five points scheme of education. It includes :

- i) Compulsory education for children of 6 to 14 years of age;
- ii) Social education for illiterate adults;
- iii) Standard higher education;
- iv) Art education for the development and preservation of National culture; and
- v) Education of science and technology for the development of the country.

Higher education occupies an important place in the educational process of a country. The prime purpose of higher education is to provide training and skills to the students so that they can either be self employed or can get employed. In independent India higher education is considered as the important tool for national development. Jawaharlal Nehru in the convocation address of Allahabad University said that, "a university stands for humanism, for tolerance, for reason, for progress, for the adventure of ideas and for the search for truth. It stands for the onward march of the human race toward ever higher objective. If the universities discharge their duties adequately, then it is well with the nation and the people. But if the temple of learning becomes a home of narrow bigotry and petty objectives, how then will the nation prosper or people grow in stature." Dr. Radhakrishnan also said, "Universities are the homes of intellectual adventures". Azad realised the importance of higher education. University Grants Commission was established under the Chairmanship of Chintamani Deshmukh and various universities in the nook and corner of the country came into being.

Azad was the first education minister of the country. He in his tenure from 1947 to 1959 did tremendous work for the upliftment of the country. Many institutions and academies were opened. Following are some of them :

- i) For the progress and development in science education following institutions were established :
 - Scientific Research Institute under the chairmanship of Shanti Swarup Bhatnagar;
 - A separate institution for atomic development;
 - Indian Council for Agricultural and Scientific Research for Scientists of Industry and Technology;

- Indian Council for Medical Research;
- Indian Council for Historical Research;
- Indian Council for Social Science Research (which include History, Economics, Sociology);

- ii) Indian Council for Cultural Relations for introduction of Indian Culture to other nations.
- iii) Institute of International Studies was established in Saproo House.
- iv) Following three academies were formed :
 - (a) Sahitya Academy for development of literature;
 - (b) Sangeet-Natya Academy for the development of Indian music and dance;
 - (c) Lalit Kala Academy for the development of Painting.

Azad was the Chairman of all the three academies. The purpose was not only to felicitate artists from different fields but to bring together the artists from different parts of the country and to help in the progress of these arts.

- v) With the aim of preservation and development of national culture, and also with the aim of study of Sanskrit language and literature many institutions and special universities were established.
- vi) Idara Uloom-e-Sharqia and Idara Uloom-e-Islami, institutions for the development of Islamic education of Osmania University, Hyderabad were promoted by him.
- vii) Azad was a scholar of history. In his regime National Archives and National Museum were looked after properly.

Khawaja Ghulam-us-Saiyyadain summarises educational contribution of Maulana Abul Kalam Azad as : 'Maulana Azad defined and comprehended the concept of adult education, encouraged researches in eastern literature and knowledge, established educational councils, formed academies for the development of fine arts, worked to solve the problem of medium of instruction, encouraged the work of preparing technological terms of science in Hindi, and tried to solve the dispute of Hindi and other Indian languages. He, by the establishment of University Grants Commission, not only solved the problems of higher education but also took it to its height. He considered the education of women more important than men and promoted it.'

All his contribution in education, depict his sincere duty towards his country not as a Thinker, not as a Philosopher, not as an Educationist, not as an Education Minister but only as a true Individual. In the words of Aruna Asaf Ali, "He believed in absolute height of individual to differ and hold whatever opinion he believed to be correct." □

Creativity — Competitive Resource and Core of Excellence

Marladoss S.J.*

It has been said that necessity is the mother of invention. What lies beneath this age-old concept is a sustained and constant search for new possibilities and new alternatives, new methods and new approaches, new processes and new products. Creativity is latent in everyone. It needs to be cultivated or exploited so as to grow as a full being. In the absence of creativity, the latent resources remain unused in a grooved mind set. It is present in every one in varying degrees but in a creative person it seems to be present in a conspicuous manner and combination.

Creativity implies a vision to be translated into action. It is basically a response of an individual or organisation or an institution to a particular opportunity. Creativity springs from the most inner recesses of human vision. Hence creativity is a competitive issue to be faced and valuable resource to be nurtured.

Creativity is a corporate culture. It has the capacity to lead the institution or management to self-sufficiency. It also means going beyond the usual way. Thinking and doing the ordinary in an extraordinary way could be another aspect of creativity. It conceives a new relational structures, new interfaces, new modes of creating and delivering values. It could also mean re-engineering and redesigning the existing process. Creativity refers to mental orientation and capability of persons to evolve and develop new and superior solutions to complex, ambiguous or unclear problems. Today more than ever, creativity is a challenge to established organisations/institutions while it is a difficult task for 'start-up' organisation/institution.

Creativity has many facets. Experts have defined it emphasising different facets of it. To some it is the discovery or production of something that is novel or useful or relevant or economical or elegant or valuable. Some others feel that creativity is a fusion of human and divine eye. Webster defines it "the ability to bring something new into existence." Abraham Maslow refers to creativity as the 'universal heritage of every human being'. Picasso defines creativity as, "every act of creation is first of all an act of destruction." Therefore creativity has a flavour of something revolutionary or subversive.

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Creative Process

Survival for the individuals and organisations/institutions is at stake in today's world in the absence of creativity. Psychologists affirm that the left side of the brain is said to stress logical, rational and analytical modes of thinking. And the right side governs emotional and intuitive experience. Integration of these hemispheres is not only a creative and an important process but also a challenge to every individual and organisation/institution. The idea of integrating these apparent opposites involves a creative process.

Wallas an early American Psychologist describes several stages of the creative process. This creative process indicates stimulating experience. It begins with

Interest	:	Compelling interest
↓		↓
Preparation	:	Planning the intellectual journey
↓		↓
Incubation	:	Non-intentional style of working
↓		↓
Illumination	:	Intuitive, synthetic 'ah-ha' experience
↓		↓
Verification	:	Capable of understanding
↓		↓
Exploitation	:	Capturing value from the creative act

Creative Outcome

A great deal of search and divergent thinking must be employed to get a creative outcome. This outcome obtained from such a process is normally characterised by novelty, usefulness and relevance. According to Amabile, a product or response will be judged creative to the extent that it is a novel appropriate, useful, correct or valuable response to the task at hand. To determine whether an act or product or outcome is creative or not, one must ponder over the following conditions.

- Does it have surprise value for the reasonably well-informed in the relevant field?
- Is the outcome or human labour seen by the knowledgeable as useful or appropriate or efficient?
- Does the creative outcome provide substantial evidence of divergent thinking?

- Does the product of human labour link two or more previously unrelated ideas or facts in a new way?
- Has the creator transformed the impulses, perceptions, facts, feelings that triggered his creative labour or the facts or ideas that served as his raw materials?

In fact all these conditions indicate that the outcome of human labour is creative only when the creator employs divergent thinking in his work.

Component Elements Of Creativity

Creativity is manifested along the following four dimensions or forms of mental capability.

Conceptual Fluency : Rapid and relevant generation of ideas with reference to a given problem, situations and issues under consideration.

Conceptual Flexibility : The capacity to shift perspectives, viewpoints to move from one frame of reference to another and to change or vary the approaches to solutions to problems.

Originality : One produces unusual, novel, atypical answers to questions, responses to problems, interpretation of issues, situations and events.

Complexity Orientation : Every person has the courage and confidence to challenge. This quality of a person helps him find meaning in complex and ambiguous problems. In such situations creativity leads him to probe, analyse, integrate, clarify and resolve the problems.

The above mentioned four elements of creativity which are inextricably linked with individual's knowledge, experience and imagination are equally important for all to be creative and successful. Therefore to progress towards creative or innovative solutions to challenging problems, everyone must possess strong motivation and interest.

Characteristics of a Creative Person

The following are generally considered to be the characteristics of a creative person.

- * Seeing things in unusual ways
- * Independence in judgement
- * Curiosity
- * Self-reliance
- * Sensitivity to problems
- * Motivation
- * Openness to experience uncertainty
- * Needing and assuming autonomy

- * Freedom from fear of failure
- * Tolerance of ambiguity
- * Persistence
- * Selectivity
- * Flexibility
- * Originality

Determinants of Creativity

Determinants of creative behaviour are the following according to some scholars:

- The values and practices of the culture in which a person is brought up and lives
- A person's biological constitution
- Nature of the organisation or institution
- Genetic inheritance
- The orientation of the group
- The nature of the work the person does.

Some Common Blocks

It is not easy to be creative. There are numerous blocks for each person to be creative in his/her approach. The following are some of the common blocks to divergent thinking and creative functioning.

- | | |
|--------------------|---------------------------|
| 1. Fear of failure | 2. Allergy of ambiguity |
| 3. Touchiness | 4. Conformity |
| 5. Rigidity | 6. Stereotyping |
| 7. Dogmatism | 8. Starved sensibility |
| 9. Resource myopia | 10. Functional fixedness. |

Creativity: A Competitive Resource

Today creativity is a highly valued resource not only for individuals, business sectors and institutions but also nations and human society as a whole. It is the origin of scientific discoveries, medicine, engineering achievement, technological inventions and innovation. It also enables an individual and members of an institution to

- discover new opportunities for growth and development
- analyse and solve difficult problems with innovative insight and approaches
- generate resource through greater productivity, cost reduction and waste avoidance
- amplify the effectiveness of organisations' / institutions' strategic positioning work operation and responses.

- facilitate and strengthen the integrative element of the organisation/institution
- facilitate implementation of creative methods of management
- enhance efficacy and self-esteem.
- strengthen the effectiveness organisation ' R&D efforts
- effectively and efficiently achieve the goals.

All these dimensions of creativity provide the base for excellence. Therefore creativity is a powerful resource for survival in today's competitive world. It must be properly analysed and harnessed which will help us not to accept the reality but also to achieve greater things. The organisations/institutions, which are unable to marshal and mobilise the creative talents of their human resources are doomed to stagnation, decay and demise. They have a bleak future; rather they have no future.

Creativity : The Core of Competitive Excellence

We are living in hyper-competitive and turbulent environment. There is an increasingly uncertain future. The following may be the factors causing the uncertainty.

- * Short life cycle of the products
- * Rapid pace of technological development, change, diffusion and commercialisation
- * Growing use of information technology
- * Increasing fragmentation of markets
- * Expanding trends towards product variety and customisation
- * Unprecedented challenge
- * Incessant pressures from the present and unceasing uncertainties of the future
- * Short-sightedness.

To cope with the ever-emerging challenges of change, institutions or organisations or individuals ought to develop creative, innovative and novel responses to new problems, new situations and new demands. Responses must be fashioned with the latest techniques, concepts and insights. Overcoming such severe constraints must be the objective of any growing organisations. Organisations/institutions therefore have to fuse different existing technologies.

It is imperative that the organisations/institutions must view the employees as valuable resources

to cope with the changing situation. To motivate the employees who are the source-springs of creativity and innovation, organisations/institutions must continually build and strengthen a culture of innovation and achievements which will ensure good, relevant, novel and appropriate response to the turbulent pressures and to the daunting problems. And thus the employees may emerge as "Change masters".

Use of creativity as an organisational and competitive resource implies the following requirements.

- Instructions and training to organisational personnel in the methods and techniques is necessary to creatively explore problems and generate ideas for solutions.
- Meticulous planning and implementations of programme ensures achievement and empowers small groups for "improvement after improvement". And they are motivated to regularly engage in creative analysis.
- Create an organisation-wide environment to foster the creative potential of organisations'/ institutions' personnel. Efforts must be made to utilise their creative talents and skills for the benefit of their organisations/institutions.
- Offer an environment which is called 'Culture of creativity and excellence'.

These requirements will definitely encourage the employees to cope with the competition challenges and confront it. If an organisations is able to meet all these requirements effectively, it would be able to utilise creativity as highly valuable and competitive resources in a cumulative and self-sustained manner.

Let us cultivate the valuable resource of creativity to creatively respond to the changing situations and become the 'Masters of Change' in every field.

C = Customer satisfaction leading to customer delights

H = Honour and dignity to all the people

A = Accountability from every area of service

N = New ideas and commitment to innovation

G = Growth as a continuous discipline

E = Excellence expressed as yardstick for performance and evaluation.

"The corporations that will survive and thrive in the future, are those that foster creativity today." □

Education, Society and Market

— A Critique

S.P. Punalekar*

Since 1991 there is opening up of all sectors of India's economy; be that industry, trade, finance, communication or social service including education. This marks a decisive and critical shift in the policy thrust of Indian state. Now emphasis is more on competition and privatisation; deregulation and decontrol. This transformative measure is being carried out after five decades of self-rule with explicit agenda of growth with social justice; after mixed experiences with centralized planning and state management of human and material resources in our country.

Education is a strategic sector of Indian economy, and substantive changes within it may engender pervasive consequences for future growth patterns and directionality. And as we all are witnessing this sector is also opening up (albeit slowly till 1995), and little faster after that for private management and entrepreneurship.

Needless to emphasize that one has to concentrate on emerging prospects and pitfalls of privatisation in education, especially its impact on higher education and quality of labour force that may be built up through formal courses and other skill upgradation training in science and technology. It has also to be remembered that we cannot gloss over some basic issues like equity and justice to which we have committed through constitution and democratic institutions.

At the outset let us make it clear that there is no room for reversal of present 'reform' trends and tendencies. They are the product of socio-economic changes world-over and one cannot shy away from deregulation and decontrol. One cannot foreclose the emergence and consolidation of private participation and management of national life, including education and socialization in scientific knowledge and modern technology. Even smaller countries in our neighbourhood in Asia and elsewhere seem to have done better on economic front, principally due to commitment to openness and competition, receptiveness to unconventional ways of social restructuring and deeper sense of experimentation. These countries (Japan and Singapore, for instance) have much

less poverty, higher GNP and excellent educational status. Much of this has been possible due to flexible and viable negotiation these countries had with market structures, including the forces of globalisation.

But there is another side to this phenomenon. Privatisation is not an unmixed blessing. To fully realize its positive potentials privatisation needs, among other things the following : (i) enlightened and socially sensitive leadership, (ii) willingness to democratize all aspects of critical functional areas with eye on creative criticism and timely rectification, and (iii) an ability to carry all sections of society along the new path with focused attention on social efficiency and collective wisdom.

It also merits a fair and objective evaluation of what went wrong with earlier policy design and its underlying norms. Mere ideology does not help to promote any programme at the ground level; it needs caution and preparedness on several fronts. But without ideology, no programme generates a lasting bond between the people and programme, or its delivery system. It may be pragmatic and time-serving, but without an intrinsic force to organically link itself to other vital sectors of economy, society and polity.

It is for these reasons, Tagore's concept of education was vital. But it remained too far removed and never had a chance for applications at ground level. So was the fate of Gandhi's notion of basic education, because Gandhi's basics or fundamental principles of society were not realized into practice. Education is after all an offshoot of social system; it is governed by dominant social, economic and political interests in the society. Needless to say that these ideal-typical educational projects emerged as islands, worth to admire at, but too complex for universalized application and replication.

This does not mean that experiments themselves are irrelevant or unworthy. Rather, they tend to act as mirrors to our lack of imagination and capacities. They have their role; both critical and rejuvenating. They essentially signify the limits of our capability to grow with sense of unity and togetherness. To my mind, these aspects of criticality and creative vision might not find an echo in a mindless market-driven privatisation in education. Rather there is a danger of these principles getting sidelined or derailed at the

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altar of competition and market efficiency. This is my fear that may not come true if the common citizens are alert and conscious of larger objectives of growth with equality, justice and empowerment.

In not very distant past education was essentially a domain of private initiative; either of socially committed individuals or groups or of the benign princely state rulers. Also social history of educational development in some regions suggest that to a large extent, the upper castes and that too male members from these castes largely benefited. It was only around the turn of twentieth century, some conscious efforts were made by social reformers to create schools for backward classes and castes, and also for girls.

Social reformers and visionaries like Thakkar Bappa and Jugatram Dave opened schools for the tribals in Gujarat and other parts of Western India. Karmveer Bhaurao Patil worked tirelessly for the educational upliftment of rural masses. Dr. Babasaheb Ambedkar developed higher educational institutions in Maharashtra for the benefit of Scheduled Castes, and Maharshi Karve strived doggedly for the higher education of women. In other parts like West Bengal and Karnataka, similar efforts were made by Hindu social reformers and Christian missionaries to spread education among the deprived castes and classes including women.

Needless to emphasize that education was one of the goals of India's freedom movement. Mahatma Gandhi, even while leading the epic struggle against colonial regime, tried to evolve an alternative, community based system of education; an experiment which could not strike deeper roots in our society. Why did this happen is a question which would require a separate probe. Rooted in the struggle for Independence, several articles in the Constitution of India brought to the fore the general principles governing educational development in our country.

At the time of Independence in 1947 India inherited an educational system which was not only quantitatively small but was also characterized by striking regional and structural imbalances. Only 14 per cent of the population was literate and only one child out of three had been enrolled in primary school. The low levels of enrolment and literacy were compounded by acute regional and gender disparities. Recognizing that education was vitally linked with the totality of the development process, the reform and restructuring of the educational system was accepted as an important policy and programme area for state intervention.

Within an overall policy framework, each state within union determined independently the educational structures to be adopted. However, the Union Government has a clear responsibility regarding the quality and character of education. The Central Advisory Board of Education (CABE), set up during the pre-Independence period in 1935, continues to play a leading role in the evolution and monitoring of educational policies and programmes, the most notable of which are the National Policy on Education (NPE), 1986, Programme of Action (POA), 1986, and a revised NPE and POA (1992).

It is worth noting that good deal of money is spent on educational sector year after year. To illustrate, till the Sixth Plan, education was taken to be a social service rather than an input in the development process. Less importance was given to educational themes and projects. But now, thanks to global pressures, education is being considered pivotal in socio-economic development strategies. Education is now being conceived as Human Resource Development (HRD); a concept largely received respectability due to influence of western ideas and experiences. This logic and message of HRD is reflected in the NPE, 1986 and in the budgetary allocation of resources.

The Eighth Plan outlay for education (central and states) at Rs. 19,560 crore was considerably higher than the Seventh Plan expenditure of Rs. 7633 crores. It was 2.6 times larger, a forward step indeed in resource allocation for financially under-privileged sector. Also, there was larger responsibility of central agency i.e. the Union Government in recent times. In the year 1995-96, the Central Plan outlay for education was estimated to be around Rs. 1,825 crore. It was much higher compared to earlier year, i.e. 1994-95 (Rs. 1,514 crore).

There has also been an *inter se* shift in the allocation of resources within the education sector from higher education to elementary education. The outlay on elementary education is up by 24.5 per cent to Rs. 651 crore in 1995-96. For university and higher education, outlay for the same period is Rs. 246 crore. For technical education, outlays are in the order of Rs. 253 crore in 1995-96. Even then, areas like primary education and adult literacy programmes leave much scope for improvement, and hence need serious attention and appropriate financial allocations.

We must note that student population at pre-primary and primary levels of education is increasing, though in terms of quality and infrastructure there are several nagging problems. Barring few student

segments studying in schools run by private sector (having competitive edge and social productivity mission), there is much to be desired at the level of state-supported primary education institutions. There are difficulties galore on several fronts; school buildings, environment, teachers, pedagogy used, inspection levels, etc.

Much has been said about this in last 40 years; and several studies have been conducted with a few extremely insightful documents (authored by Aparna Basu, Krishna Kumar, Karuna Ahmed, I.P. Desai, M.S. Gore, Suma Chitnis, etc) giving very useful suggestions. But nothing tangible seems to have happened. Partly, reason for sluggishness is the quantity factor, i.e. supply side of the phenomenon, mainly due to demographic pressures. But that is not a sole reason. A lot depends upon the teaching community and the educational system which governs the enterprise; parental attitudes and involvement; community participation and critical collaborations, and above all the deeper engagements of other segments of the society, i.e. trade, commerce and industry.

The final product which the society receives at the end of educational tunnel is processed through various mediating agencies, of which the primary education constitutes an important source. And that source is often neglected in idea and resource endowments. Many scholars have pointed towards these shortcomings, and all commissions/committees (from Kothari Commission to the NEP) have emphasized on this point. But very little seems to be occurring at the ground level; and that is quite a worrying situation. Non-enrolment, stagnation and dropout are not solely pedagogical disasters; they owe their persistence to societal neglect and indifference to one of the core needs of society.

All ideas about human resource development lose their relevance if the younger, malleable population (both boys and girls) remain uncared in their educational needs and aspirations. Several of the dalit (SC, ST, Women, Muslim) autobiographies which appeared during 1970's to 1990's demonstrate this unconcern and apathy for the members of these downtrodden classes; both urban and rural, but more rural than urban. This is an area where a great deal of thinking and praxis is needed to overcome the malaise.

At secondary school level, the enrolment ratio was merely 20 in 1960, improved to 28 in 1975. Recent estimates are that some 39 per cent of eligible children seek admissions in secondary schools. Situation at higher educational level is indeed sluggish

and critical. In 1960, some 3 per cent of eligible population was in higher educational stream. This ratio improved to 8.6 per cent in 1975. Current estimates of 9 per cent enrolment at higher educational level do not show much promise and hope. In this context, experiences of other fast developing countries in our neighbourhood are quite instructive. In Japan, enrolment ratio in higher educational stream is as high as 30. South Korea even surpasses Japan with enrolment ratio of 32.9. Even countries like Taiwan and Thailand have better enrolment ratios (13 and 20 per cent respectively).

In India, public investments in educational sector is not growing at expected pace as some recent data suggest. In 1970, for a total student population of 3217 millions, per student investments in India was US\$ 40.2. By 1984, this per capita investment had increased to US\$ 43.8 showing a measly growth rate of 0.6 per annum. In comparison Japan spent US\$ 2600 per student and Singapore spent US\$ 1332 per student. Most of these growth oriented countries have an annual investment incremental rate of 8 to 9 per cent.

Besides, public expenditure on education in India has remained somewhat stable around 3 per cent of its GNP. In 1965, India spent 2.5 per cent of its GNP on education; in 1989 it was 3.2 per cent; an increase of merely 0.7 percentage points. In India between 9 to 10 per cent of total governmental expenditure was on education. But other countries like South Korea, Japan and even Iran did better. Between 16 to 23 per cent of total governmental expenditure in these countries was meant for educational sector. It may also be interesting to note that according to U.N. study (1987), in India, 2.6 per cent was the household expenditure in relation to total private final consumption expenditure in the year 1985. In South Korea it was as high as 4.8 per cent in 1980.

Developing educational structures in our country is both challenging and stressful path. Difficulties are enormous, so also are the prospects, if we are able to overcome the obstacles. Issues concerning privatisation in education have to be problematized in this broader perspective of our present socio-economic reality and global pressures for change and transformation. What is essentially needed is evolution on the pattern of further and richer democratization of educational processes and also furtherance of social and technical efficiency in all spheres including the aspects of governance and sustainable development.

Fulfilment of these goals demand recovery and further strengthening of those elements and tenden-

cies found within the public management and control of educational structures, alongside full support to and acceptance of private initiatives which are oriented towards excellence in educational standards in global, competitive environment. It is also imperative that we pay attention to quality dimension in knowledge generation sector.

Here Perkinson's caution need to be heeded to avoid trap of mediocracy and mindless imitation. He emphasized that, "...The Popper-Darwinian construction of improvement is directly applicable to the process of education and provide what has been missing since Socrates : a non-authoritarian conception of that process... Most contemporary educators employ the Lamarckian approach and not the Darwinian one...."

He further argues that the problem with transmission conception of the education process, which has reigned since Aristotle, is not simply that it is wrong but that it results in an authoritarian construction of education. In other words, we have to move forward in the direction of non-authoritarian form of knowledge building, where a teacher assumes that the student already possesses knowledge and also assumes that the student is the source of growth. "Rather than an imposer of knowledge, the teacher tries to create a critical environment, an environment that will help the student discover the inadequacy of that knowledge and encourage him to modify it", Perkinson emphasizes.

Can privatisation promote and encourage such mode of teaching and learning? Would it be able to instill in the students an ability and confidence in critiquing, what Ivan Illich underlined, the logic of conventional wisdom which is becoming suspect? Illich has perceptively argued in favour of developing critical faculties of students, and raising consciousness against mega-projects and corporatism.

He cogently questions the supremacy of high-tech, mega institutions in following words : "...But under either ideology (capitalist or communist) the total cost of increasing efficiency increases geometrically. The largest institution compete most fiercely for resources which are not listed in any inventory; the air, the ocean, silence, sunlight and health. They bring the scarcity of these resources to public attention only when they are almost irremediably degraded. Everywhere nature becomes poisonous, society inhumane and the inner life is invaded and personal vocation smothered. (Pp. 113-14, emphasis added).

We have realized at much greater costs how creative spirits of individual seekers of knowledge are

crushed under public systems of knowledge industry. We have also witnessed the presence of academic products emerging out of public supported educational institution that have failed our society in critical junctures, both in economic and moral terms. Certainly, these ills have to be rectified sooner than later, at least earlier than the global compulsions derail our basic objectives of growth with justice.

But can privatisation of education provide solution to these questions? Yes, it can. That is possible if individual merit and questioning is answered by the privatisers through creation of positive, sustaining environment for learning and growing. But it shall fail, if private greed and profit maximization gain an upper-hand in management and control of educational institutions and resources.

Market economy does not always function in a neutral matrix; it may promote the less efficient, and more resourceful, at the cost of meritorious but from the unpropertied strata. Those who are in favour of privatisation need to safeguard this sanguine principle of efficiency with equity. □

UNIVERSITY NEWS

A Weekly Journal of Higher Education

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CAMPUS NEWS

Seminar on Placement Opportunities

The University Grants Commission sponsored one-day State Level Seminar on "Placement Opportunities for Commerce Graduates" which was organised recently by Nehru Memorial College Puthanampatti Tiruchirapalli, Tamil Nadu. There were 60 participants in the seminar from 54 colleges of 7 universities of the State. The representation from all the major educational institutions/universities in Tamil Nadu was an encouraging factor to the seminar. Dr. S. Ramalingam, the Principal of Nehru Memorial College, Puthanampatti and Chairman of the seminar welcomed the gathering.

Dr. S. Rajagopalan, the Director of the Seminar introduced the theme of the seminar. Focusing on the impending challenges which centre round the Commerce graduates, he stressed the need for competency not only in commerce but also in multi-disciplinary subjects especially in computer literacy. It was very clear from his introduction that the seminar was aimed to analyse the scope of employment opportunities for Commerce graduates and also to identify the areas in which they have to enrich their knowledge to make themselves competent and employable.

Prof. M. Ponnambalam, the Secretary, Nehru Memorial College, Puthanampatti and the Patron of the Seminar delivered the presidential address. In his speech, he laid emphasis on the competency to understand the underlying link between Commerce and Computer Science. He posed a

challenge to the Commerce graduates for evolving an amalgamation of the two disciplines with the maximum innovation. He also expressed his desire for an integration of Management Studies, with Information Technology (IT) and Computer Applications. Mr. M. Ponnambalam released the souvenir of the seminar.

Then, Prof. N. Janakiraman, the Head of Management Studies, Bishop Heber College, Trichy, delivered the inaugural address. In his speech, he justified the need for upgradation and competency on the part of the teachers. He suggested the participants to realize "the infinite power within" themselves. Curiously enough, he appreciated the dual functioning of a Commerce graduate as an entrepreneur on one side and a sincere employee to a company on the other side.

Dr. Susila Mariappan, Director, University Students' Advisory Bureau, University of Madras, Chennai, delivered the keynote address. She too stressed the need for practical aspects of education. Conversely, she advised the young graduates to improve their employability in this present world of competition. Furthermore, she made a reference to the need for wholesome personalities for the future. The inaugural session came to an end with her speech.

The Technical Session I of the seminar was focused on the area "Commerce Graduates and Self Employment", Mr. P. Sureshkumar, Assistant Director, Employment Exchange, Trichy was on the Chair. In his speech, he

mentioned that the students from the portals of colleges should not be mere job seekers instead they should be job-providers. He gave a detailed account of self employment schemes offered by the Government of Tamilnadu. There were 15 papers presented in the first technical session on topics like "Self Employment Avenues for Commerce Graduates", "The SWOT of Commerce Graduate in the next millennium", "Self-employment as a goal of Growth for Commerce Graduates" and "Re-engineering Commerce curriculum — the tool of the self employment". Dr. S. Arunachalam, Reader, A.V.C. College, acted as the Rapporteur.

The Technical Session II focuse on "Commerce Graduates & Professional and Computer Education" Mr. P.S.M. Hameed, Manager (Finance) BHEL, Trichy was on the Chair. During his introductory remarks, he insisted the importance of professional courses and computer education. He said that the literacy in computer education has become the need of the hour. He also explained the salient features of all the three professional courses and shared his experiences.

Followed by the Chairman's remarks, 15 papers relating to the theme of the session were presented on various titles like "Commerce Graduates and Professional Courses", "Commerce Graduates and Computer Courses", "Recruitment Through Internet", "Role of Computer Education in Commerce — Need for a Change in the Next Millennium" and "Employment through Computer Education". Dr. N. Panchanatham, Reader in Business Administration, Annamalai University acted

as the Rapporteur for the Technical Session II.

The feedback of the seminar was given by Dr. K. Aiyadurai, Arul Anandar College, Karumathur and Dr. S. Sekar, Urumu Dhanalakshmi College, Trichy. They appreciated the papers presented and the arrangements made for the seminar.

Dr. V. Ayothi, Registrar (I/C) Bharathidassan University, Trichy delivered the valedictory address and distributed the certificates to the participants. In his valedictory address, he recommended the entrepreneurship as one of the good options for the growing need. He pointed out aptly that the young Commerce graduates should have to supplement their knowledge with other skills. Dr. V. Selvaraj, Commerce Department, proposed a vote of thanks. The seminar came to a close with the national anthem.

Indian Science Congress

University of Pune will host the 87th session of the Indian Science Congress between January 3 and 7 which is expected to attract over 5,000 delegates from all over the world.

Prime Minister Atal Behari Vajpayee has been invited to inaugurate the five-day conference which will focus not only on areas of frontier research in several disciplines, but also debate the relationship between science and society.

The conference is being organised by Pune University along with the National Chemistry Laboratory and Bharati Vidyapeeth.

Dr. R.A. Mashelkar, Director General, Council of Scientific and Industrial Research and General President of the Indian Science Congress Association, said that by

2015 AD, about 55 per cent of the Indian population would be less than 20 years old, making the country young and energetic. Hence the plenary session of the ISC would lay heavy emphasis on the young scientists who would be the future leaders. About 25 young scientists in their 30s and 40s — and not their seniors — will talk about their dreams in the plenary session. The contemporary themes would go far beyond science — emerging frontiers of science and “how we can create our own frontiers for others to follow.” The session would predict the things to come in the 21st century.

The congress would have 16 other sessions, including information technology, biotechnology, ethics, philosophy, health, environment and ecology. The ‘trinity’ would address a ‘strategic session’ and throw light on Indian successes in defence sciences, nuclear energy and space research. The IT would not be projected just as information technology but as the Prime Minister had put it — India’s Tomorrow.

The meet would work on a five-point agenda for the new millennium — child-centred education, woman-centred family, human-centred development, knowledge-centred society and innovation-centred India. These deliberations would result in a powerfully-worded ‘Pune Declaration’ which would be relevant even in 2050, Dr. Mashelkar said.

Apart from scientific discussions, there will be sessions on key areas like nuclear technology, defence and aerospace research. It is in this context the participation of scientific adviser to the defence minister A.P.J. Abdul Kalam, chairperson of the atomic energy commission R. Chidambaram and chairperson of the Indian Space Research Organisation K.

Kasturirangan at the conference assumes significance. Three Noble Laureates Richard Ernst, Jean Marie Lehn and Norman Borlaug will also be attending.

Apart from the congress, there will be an international exhibition of science, technology and knowledge-based industries and a global convention on information technology and bio-technology. Mr. Mashelkar said the exhibition covering an area of 15,000 square metres was expected to attract about half-a-million visitors. Some of the theme pavilions planned at the exhibition include research and development, information technology, bio-technology, education, environment, energy and health and society.

To coincide with the exhibition, there will be a global convention called ‘The Genesis’ which will be inaugurated on January 5. Mr. Mashelkar said it will be a unique forum where technopreneurs of Indian origin from abroad belonging to the fields of information technology and biotechnology will participate in an open discussion with their Indian counterparts.

Mr. Mashelkar said, “Together they will try to explore future opportunities while finding answers to questions like : How can we create better Silicon Valleys, Triangle Parks and Wall Streets in India? And why the same Indian genes express differently in such places?” The exhibition and the Global Convention are being managed by Chemtech Foundation and Market Missionaries.

Speech Synthesiser — The Indian Version

Dr. J.C. Ray of IIT, Kanpur has not only modified a “Speech synthesiser” to suit Indian pockets and languages, he has also

manufactured it in the IIT workshop and is ready to market it directly to the people.

Imported speech synthesisers, said the scientist, cost between Rs. 5 to 6 lakhs a piece. In sharp contrast, 'Vaneeshri', the equipment christened by him, would cost a paltry Rs. 6,000 in the country. It is also available in three models using Hindi, Bengali or English, unlike the imported synthesisers. What is more, Vaneeshri's capacity is said to be five times more than its imported counterpart. While an imported synthesiser has a memory of just five minutes, claimed Dr. Ray, his equipment has a memory of 25 minutes.

The equipment, he hoped, would turn out to be a boon for the vocally disabled and for spastics. It has in its memory most of the useful sentences needed for normal, day-to-day conversation. The user can select any sentence by using two switches. When he presses the 'talk' switch, the sentence become audible through a speaker drawing power from a 220 Volt AC line. The sentences have been placed in the memory in a highly compressed and coded form and take up only two per cent of the memory space. As a result, the size of Vaneeshri has been reduced to the size of a calculator.

The equipment comes with edge connectors for touch-operated switches which can be mounted on wheelchairs and any part of the user's clothes. Foot-and chin-operated switches would also be made available, said Dr. Ray.

The device could also connect patients in the ward to the doctors' rooms, the scientist pointed out. It could be useful to the business traveller and the tourist who want to communicate in a language not known to them. Finally, said Dr. Ray, the equipment could prove

very useful in underground mines where very little electrical power was available. The Indian Institute of Cerebral Palsy, he informed, had already approved the synthesiser.

"I am grateful to Dr. Padmanabhan, Director of the IIT, for giving permission to manufacture it in the workshop", said Dr. Ray. His assistant, S.K. Kale, who has worked closely with him, is looking after the marketing of the product. This is the first time that IIT, Kanpur has allowed a scientist to actually manufacture an equipment developed in its laboratories.

Correspondence Courses of KU

The premises of the Directorate of Correspondence Courses of Kurukshetra University is over crowded with the admission seekers as the last date for admissions is approaching.

Installation of Computerised Enquiry, Counselling Bureau, Prospectus Sales Counter, Bank Counter for direct deposit of fee by the students in the bank, simplification of admission form and admission procedure, proper sitting arrangements for admission seekers in the premises of the Directorate itself, streamlining of fee structure;

availability of Prospectus and admission form on website <http://kuk.ernet.in/de/de.html>; e-mail de@kuk.ernet.in for quick response; instantaneous delivery of study material at the time of admission; regular evaluation of response sheets/assignments received from the students; effective classes during PCPs; recognition of courses of all recognised Universities/Boards for admission to distance education courses are some measures taken for providing better service to the students. According to the Vice-chancellor of the university Dr. M.L. Ranga, as a result of the effective teaching under the stewardship of the competent Course Coordinators, who are senior experienced professors of the university with the help of their other colleagues and seasoned teachers in the university teaching departments during the intensive Personal Contact Programmes, the students of distance education courses, with common syllabi and question papers applicable to other students of the university and its affiliated colleges, have excelled attaining high meritorious positions in the university examinations. The dependants of the Kargil martyrs are exempted from payment of the course fee and they are required to pay only



**SANJAY GANDHI POST GRADUATE INSTITUTE OF
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FAX NO. 91-522-440973, TELEPHONE-440004-8

CORRIGENDUM TO ADVERTISEMENT NO. ACAD-7/99 REGARDING M.D. ENTRANCE EXAMINATION

1. The entrance examination for admission to M.D. courses scheduled to be held on 16th January, 2000 shall now be held on 20th February, 2000 at 11.00 a.m. at the Central School, SGPGIMS Campus, Lucknow.
2. The last date for issue of application forms only for the M.D. entrance Examination is extended upto 6th January, 2000 and completed application forms would be accepted up to 15th January, 2000.
3. Other contents of above referred advertisement remain unchanged.

EXECUTIVE REGISTRAR

Rs. 500/- on account of examination fee etc.

There is a continuous trend of increasing enrolment of the students in the Directorate for last couple of years. In comparison to enrolment of 4316 students on 30th September, 1996 against total enrolment of 17844 students during 1996-97; and 5929 students on 30th September 1998 against total enrolment of 23880 students during 1998-99, the Directorate has enrolled about 14,000 students upto 30th September 1999 the closing date without late fee this year. While the admission with late fee still continues, total enrolment for distance education courses in the Directorate is likely to be around 35,000 this year. And about 35000 copies of prospectus have already been sold which figure may rise to 55,000 this year. The successful collaborative Programmes with Wisdom Educational Institute, Dubai with centres in Abu Dhabi, Doha and at other places for enrolling students from Gulf Countries and with Zee Education (of Zee TV) for enrolling students for its courses more especially the BCA, BBA, PGDCA, B.Com. and CCA for providing them study material and coaching have also contributed to the success. Apart from the traditional courses of the B.A., B.Com., M.A. English, Pol. Sc., Economics, Hindi, Punjabi, History, Sanskrit, Public Administration, M.A./M.Sc. Mathematics, M.Com., the Directorate runs Professional Courses of Certificate in Computer Applications (CCA), Post Graduate Diploma in Computer Applications (PGDCA) in the field of Computer Science and Application; Post Graduate Diploma in Marketing Management, Post Graduate Diploma in Tourism and Hotel Management, Bachelor of Business Administration (BBA), PG Diploma in Tour &

Travel Management, Master of Financial Management in the field of Management; Diploma in Library & Information Sc., Bachelor of Library & Information Sc., Master of Library & Information Sc. in the field of Library & Information Science; PG Diploma in Journalism & Mass Communication; PG Diploma in Environmental Education. Three new job oriented courses of Bachelor of Computer Applications (BCA), Post Graduate Diploma in Export Marketing Management and Master of Marketing Management have been introduced recently.

As disclosed by Mr. L.C. Gupta, Director, Correspondence Courses, the Directorate has received an overwhelming response for admission to its M.Phil. courses in Hindi, English, Sanskrit, Punjabi, Pol.Sc., Economic, Mathematics, Physical Education & Commerce for which there are limited number of 30 seats in each subject. On pressing demands from the aspirants, M.Phil. course in History has also been started.

With the joint efforts of the Directorate of Correspondence Courses, Kurukshetra University and the Zee Education, the Development and Educational Communication Unit, Indian Space Research Organisation, Ahmedabad has agreed to extend support and telecast the course material in the form of 'talk back' programme in respect of its distance education courses on TV channel AES station/uplink on INSAT 2B/2C-93.5°E as DD-4, DD-9, DD-10, DD-11, DD-13. To begin with only the selected courses of Post Graduate Diploma in Computer Applications (PGDCA), Bachelor of Computer Applications (BCA), Certificate Course in Computer Applications (CCA), Bachelor of Business Administration (BBA) have been

undertaken for telecast with effect from 7 October 1999 between 1400-1730 hours. Schedule of further programmes telecast will be notified by the Programme Coordinator (talk back). DECU, ISRO from time to time.

IGNOU Centre for Handicapped

The Indira Gandhi National Open University proposes setting up a learning centre for the physically handicapped at Lucknow. The centre will operate from the Rehabilitation and Artificial Limb Centre (RALC).

Highlighting the need for such a centre, Dr. Madhurima Singh said that 15 to 20 per cent students of the open university belonged to the handicapped category. These students often found it difficult to cope up with the pressure and discomforts and their studies suffered due to this.

The venture for the centre has been finalised keeping the fact in mind that physically handicapped people could easily associate themselves with the RALC which has been dealing with their rehabilitation.

Dr. Net Ram, Director, Handicapped Welfare, said that the centre would aim to provide better facilities to handicapped students. He said that initially the courses would include degrees in Bachelor of Arts, Bachelor of Commerce, Bachelor of Tourism Studies, certificate course in Food and Nutrition, diploma in Health and Nutrition and diploma in child care.

Instt for Maritime Studies

The central government has decided to set up a Central Institute for Maritime Studies by bringing under its umbrella the other training maritime institutes.

According to official sources the new institute will be created by forming a registered society and placing the four government-run maritime institutions, namely the Lal Bahadur Shastri College of Advanced Maritime Studies and Research, Mumbai, Training Ship 'Chanakya' (T.S. Chanakya), Mumbai and Marine Engineering and Research Institutes located at Mumbai and Calcutta within its domain.

The above institutes are at present under the control of the Department of Shipping in the Union Ministry of Surface Transport and are subject to various rules and regulations applicable to government organisations.

With the formation of a separate society to oversee the affairs of these training institutes, it is expected that they will be able to perform better as a result of greater operational freedom.

The new institute, expected to be set up in Mumbai, will provide training in the maritime field to prepare top class trained personnel for the Merchant Navy. It will help the Indian shipping industry with up to date information through research and publication and will also assist the training institutes in the country to carry out research in a number of relevant areas.

Under the new plan it is proposed to transfer the assets of the institutions to the new society and also provide for lumpsum funds as block grants. The representatives of the industry will be actively associated with the running of the institute and modalities will be worked out for smooth transition from government-run institutes into training institutes of excellence in the field. It is also proposed to chart out a time bound plan

of action so that the institute becomes self-sustaining over a period of time.

The proposed institute is also expected to regulate the training activities so that the marine engineers are given up to date information about different service conditions obtaining in different countries worldwide.

As early as in 1992, a committee had recommended the setting up of an Indian Maritime University to manage various government-run maritime training institutes. The decision to start an autonomous body now is expected to be a forerunner of the ultimate conversion of the society into a deemed university and subsequently, into a full-fledged university.

Now the new institute is expected to provide considerable operational freedom to the institutes, thereby facilitating the starting of new programmes and courses.

The maritime training is perceived as a continuing process and comprises of various stages such as pre-sea training, on-board training, post-sea training and specialised training. Training of maritime personnel in India has been accorded top prior-

ity by the Government of India since Independence.

Seminar on Biodiversity

A state-level seminar, 'Biodiversity of Assam and its Conservation' will be held under the sponsorship of the University Grants Commission on January 30, 2000 at Karimganj College, Karimganj.

The thrust areas to be covered in the seminar include a) district flora angiosperms, orchids and ferns, b) algal and fungal flora of different habitats, c) threatened plants and animals, d) wild-life, e) measurement of biodiversity f) causes of depletion of biological wealth and, g) conservation strategies of flora and fauna.

The release said all contributors must register themselves by paying a registration fee of Rs. 200 through demand draft drawn in favour of "UGC sponsored State-level seminar — 2000, Karimganj College." The selected papers will be published under the title "Biodiversity of Assam and its Conservation."

Further details may be had from organising secretary, UGC sponsored State level seminar, Karimganj College, Karimganj-788 710, Assam.

INDIAN INSTITUTE OF ADVANCED STUDY RASHTRAPATI NIVAS, SHIMLA-171 005

Applications are invited for a few Fellowships for senior scholars and advanced researchers in humanities, Indian culture, history and philosophy of Indian science, comparative religion, social sciences, foundational scientific theories etc by the IAS, Shimla, for the academic session (April 2000-March 2001).

Themes chosen should : (i) reflect breadth of perception; (ii) have deep human significance; (iii) bear special relevance to national concerns and Indian heritage; (iv) relate to interdisciplinary research; or (v) enquire into the interface of science, philosophy and society.

The Institute has no laboratory facilities and does not support research projects involving extensive field work.

Please write to the Deputy Secretary (Administration) for further details and application form.

The applications should reach the Institute within a month of the publication of this advertisement.

—davp 903(2)99

News from Agricultural Universities

HAU Renames Deptts

The nomenclature of the two departments of CCS Haryana Agricultural University has been changed with immediate effect. According to Mr. Vinay Kumar, Vice-chancellor CCSHAU, the Department of Child Development and the Department of Botany have been renamed as Department of Human Development and Family Studies and Department of Botany and Plant Physiology respectively. The Board of Management in its meeting held at Chandigarh recently approved the above nomenclature in view of the changes made in the course curriculum of these departments.

UNESCO Award for Swaminathan

Eminent agricultural scientist Dr. M.S. Swaminathan will be awarded UNESCO Gandhi Gold Medal in recognition of his outstanding work of extending the benefits of biotechnology to the developing countries. Prof. Mankombu Swaminathan's pioneering work secured a sound basis for sustainable development. He will receive the gold medal from the director-general Federico Mayor during the 30th session of the general conference being held in Paris.

Swaminathan, 74, a plant geneticist, is the father of the green revolution in India. His crossbreeding of seeds developed in Mexico with local species has made possible a leap forward in Asian wheat production.

The same miracle was then reproduced with rice, thanks to research conducted by the Philippine-based international Rice

Research Institute under the leadership of Swaminathan.

This spectacular advance, which enabled India and other countries in the region to overcome severe food shortages and reach self-sufficiency, laid the ground for their economic development in the 1980s and 1990s.

News from Abroad

MIT-Cambridge Varsity Tie up

Britain plans to invest £70 million to create an educational research partnership between the University of Cambridge and the Massachusetts Institute of Technology.

The deal will allow the two universities to co-ordinate research on technology, science and engineering, and provide for faculty and student exchanges. The goal is to encourage entrepreneurship, increased productivity and competitiveness.

"It is of great advantage to Britain's future development that we are able to attract to Britain those dynamic institutions in the United States economy that have made a huge difference to the creation of businesses and jobs", said Chancellor of the Exchequer Gordon Brown.

The total cost of the project will be £84 million with Britain to pay 80 per cent and private industry covering the rest. The project, which will be MIT's only venture in Europe, is expected to be self-sufficient after five years.

"This could transform both institutions and create a new model for the global research university in the 21st century,"

said Charles Vest, president of MIT.

The new institute will focus initially on "the intersection of engineering and management." The universities will offer common engineering, science and technology courses in the third year of study, which will allow 50 undergraduates from each university to spend their junior year abroad.

An emphasis will also be placed on management and business education. "It will give us an opportunity to explore, at a new level, cutting edge educational information technologies," said Vest, adding that the universities would be involved in an intellectual exchange which would not require the construction of new buildings or departments.

Brown predicted hundreds of new businesses would be established in the UK as a result of the partnership.

"It is sending the same message as Wal-Mart sent by its retailing activity coming to the UK and Nasdaq coming to the UK for financial services — that the UK is the right place to be in Europe", said Brown.

BOOK REVIEW

A Systematic Approach

S.K. Nayak*

Dipak Chatterjee. *Integral Calculus and Differential Equations*. New Delhi, Tata McGraw-Hill Publishing Company Ltd., 1999. Pp. 518. Rs. 225/-.

In determining the place of differential equations in mathematics, I would like to quote G.F. Simmons, the popular author of the book *Introduction to Topology and Modern Analysis*: Analysis has been the dominant branch of mathematics for three hundred years, and differential equations is the heart of analysis. This subject is the natural goal of elementary calculus and the most important part of mathematics for understanding the physical sciences." The book 'Integral Calculus and Differential Equations' by Chatterjee will certainly impress the young undergraduates in justifying the above statement. Since a sound knowledge in integral calculus is very much essential to solve differential equations, the attempt by the author to combine integral calculus and differential equations with a systematic approach is welcome.

At undergraduate level, only solvable problems in the subject are given in the texts. So students usually try to solve more difficult problems in various methods. Hardly do they bother to think whether there is any problem in the subject without having any solution. So in the higher level mathematics in other branches,

when they come across differential equations to solve, they naturally raise this question. Here, from the very beginning, the author has posed the question: "Has every function an antiderivative?" Similarly, later in the portion of differential equations, the author has raised the question whether every differential equation has a solution or not. Such type of problems do come under the existence theory of differential equations. The author, in this book, has tried to ini-

tiate thinking the question of existence of solutions for ordinary and partial differential equations in the minds of the young readers. This is certainly an appreciable step taken by the author.

The chapters as well as the sections of the book are well ordered. The worked-out examples have been chosen carefully with a definite motivation. They are of good varieties. So it will definitely help the students to understand the subject and encourage them to solve the unsolved exercises given at the end of each chapter.

The subject differential equations plays the most important role in expressing the physical phenomena in the mathematical language. Thus, a book on differential equations without mentioning

Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Affiliated to the University of Mumbai)

Plot No. U-15, JVPD Scheme, Bhaktivedanta Swami Marg,
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of Materials - 01 (f) Chemistry - 01 (g) Mathematics - 01

The minimum qualifications and pay-scales for the posts
are as prescribed by the University of Mumbai. The
details of qualifications, pay-scales and allowances will
be supplied from the college office along with prescribed
form of application. Applications should reach the above
address on or before 20th December, 1999.

Dr. D.J. SHAH, Principal

*Reader, Department of Mathematics,
Berhampur University,
Berhampur-760 007, Orissa.

this important role of differential equations is certainly an incomplete one. But, in the last chapter, the author has selected a good number of examples of typical physical phenomena in terms of the simple differential equations within the reach of the beginners. This effort of the author will definitely create interest and enthusiasm in the young minds for the subject. The author has also devoted the fifth chapter to the application of integral calculus to justify its importance.

In the second chapter of the book, the author has presented different analytic approaches to the theory of definite integrals. The students now will realise that the subject is not only to find solutions explicitly in terms of the elementary functions, but it is a part of analysis. Then the students with analytical bent of mind will really enjoy the subject. This will motivate them to go ahead with the

analytical approach to the subject.

The engineering students might have missed a lot if the method of finding solutions in series for the differential equations would not have been accommodated in the book. This has been discussed with clarity in the third chapter. The special attention towards the special equations in the sixth chapter has made the book more interesting.

The author has expressed his inability to keep the method of integral transforms and numerical methods for approximate solutions outside the scope of this book for various reasons. But had he included only the portions of Laplace Transforms to show its applications in solving the differential equations, the book would have been more useful and interesting to the students, though some more pages would have been added.

The notion of degree of an ordinary differential equation is applicable only if it is an algebraic one, as mentioned by the author. But then the examples such as 2 on page 254 and 10 on page 271 do not agree with the definition of the degree. In some elementary books, to distinguish the cases (i) equations of first order and first degree and (ii) equations of first order but not of first degree, the definition for the degree is usually given as the degree of the highest order derivative after making the equation free from radicals and fractions as far as the derivatives concerned. The readers may raise this objection. So an appropriate explanation would not have given such a chance.

Finally, the book with a systematic approach is an excellent contribution to integral calculus and differential equations and the author is worthy of praise and appreciation. □



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The Global Edge

THESES OF THE MONTH

A list of doctoral theses accepted by Indian Universities (October-November 1999)

AGRICULTURAL AND VETERINARY SCIENCES

Agricultural Sciences

1. G Maheswaran. Ecology and behaviour of blacknecked stork (*Ephippiorhynchus asiaticus* latham, 1790) in Dudwa national park, Uttar Pradesh, India. (Dr Asad R Rahmani), Department of Agriculture Sciences, Aligarh Muslim University, Aligarh.
2. Saxena, Sangeeta. Development of diagnostics against some important papaya viruses. (Prof M Shamim Jairajpuri), Department of Agriculture Sciences, Aligarh Muslim University, Aligarh.

Horticulture

1. Dharma, Patil Sunil. Studies of hybrid vigour and gene action in Brinjal (*Solanum melongena* L). (Dr S D Warade), Department of Horticulture, Mahatma Phule Krishi Vidyapeeth, Ahmednagar.
2. Farah Ishtiaq. Comparative ecology and behaviour of storks in Keoladeo national park, Rajasthan, India. (Dr Asad R Rahmani), Department of Agriculture Sciences, Aligarh Muslim University, Aligarh.

BIOLOGICAL SCIENCES

Bio-technology

1. Mohammad Kutub Ali. Binding of bilirubin to erythrocytes and erythrocyte membranes from different mammalian species. (Dr Saad Tayyab), Department of Bio-Technology, Aligarh Muslim University, Aligarh.

Biology

1. Ghorpade, Dnyandev Bapurao. Studies on productivity of low-lying areas and aquaculture potentiality of the Rajpuri creek Raigadh Distt : Maharashtra. (Dr U G Bhat), Department of Marine Biology, Karnatak University, Dharwad.

Botany

1. Deo, Prativa Manjari. Response of cluster bean cotyledons to water and light stress. (Dr Basanti Biswal), Department of Botany, Sambalpur University, Burla.
2. Gnana Sudha J. Impact of man on the ecology of two fresh water lakes of Hyderabad. (Dr Mary Esther Cynthia), Department of Botany, Osmania University, Hyderabad.
3. Iyyuni, Sobha Rani. Mycological and pathological studies of *amomum aromaticum* (ROXB) and *elettaria cardamom* (maton). (Dr Tulasi Raman), Department of Botany, Osmania University, Hyderabad.
4. Joseph, T A. Studies on combining ability and heterosis for tuber yield in potato (*solanum tuberosum* L) and its fields resistance to late blight. Department of Botany, Himachal Pradesh University, Shimla.
5. Kaul, Venu. Resource allocation in relation to floral structure and breeding system in some members of commelinaceae. (Prof A K Kaul and Prof M C Sharma), Department of Botany, University of Jammu, Jammu.
6. Kuanar, Minati. Effect of substituent and solvent in various chemical process : A statistical analysis. (Dr B K Mishra), Department of Botany, Sambalpur University, Burla.
7. Pramila, A. Studies on the effect of biological and chemical fungicides on the microflora of *spinacia oleraceae* L (Palak). (Dr T Sai Krishna), Department of Botany, Osmania University, Hyderabad.

8. Rao, D Appa. Studies on the ecology of some species of sargassum (fucales, phaeophyceae) along the Visakhapatnam coast (India). (Prof G Subbarangaiah), Department of Botany, Andhra University, Waltair.

9. Sharma, Rajinder K. Tissue culture studies of *heracleum candicans* wall (Apiaceae). (Prof M L Kaul and Dr B L Sharma), Department of Botany, University of Jammu, Jammu.

10. Uma Devi, M. Organic waste treatment and simultaneous photoproduction of hydrogen using photosynthetic purple non sulfur bacteria. (Prof Vidyasagar Rao), Department of Botany, Osmania University, Hyderabad.

Genetics

1. Rao, Chaluvadi Srinivasa. Studies on clonal propagation of some Indian mangroves and species differentiation in the genus *rhizophora*. (Prof T P Reddy), Department of Genetics, Osmania University, Hyderabad.

Microbiology

1. Pranesh, G. Screening of natural substrates for antibiotic producing microbes. Department of Microbiology, Gulbarga University, Gulbarga.

Zoology

1. Aparna, V. Metals as risk factors and role of extracellular antioxidants in coronary heart disease. (Prof V Rajeshwar Rao), Department of Zoology, Osmania University, Hyderabad.
2. Sharma, Anu. Physico-chemical analysis of some honeys from the northwest Himalayas. Department of Mathematics, Himachal Pradesh University, Shimla.

EARTH SYSTEM SCIENCES

Earth Sciences

1. Raghuvarshi, Tarun Kumar. Engineering geological appraisal of Kishau Dam project, Garhwal Himalaya. Department of Earth Sciences, University of Roorkee, Roorkee.

Geology

1. Shrivastava, Amar. The study of environmental impact of industrial effluent water on the quality of surface and sub-surface water around the industrial complex of Bhilai, District-Durg, M.P. Department of Geology, Barkatullah University, Bhopal.

Meteorology and Oceanography

1. Suryachandra Rao, A. Rossby waves in the Bay of Bengal : Observations and simulations. (Prof D V Bhaskara Rao), Department of Meteorology and Oceanography, Andhra University, Waltair.

ENGINEERING SCIENCES

Civil Engineering

1. Ahmad, Khalid Lotfy. A cost-effective photogrammetric system for engineering applications. Department of Civil Engineering, University of Roorkee, Roorkee.
2. Awasthi, Manoj Kumar. Studies on border hydraulics under varying and intermittent inlet stream applications. Department of Civil Engineering, Rani Durgavati Vishwavidyalaya, Jabalpur.
3. Digraaskar, A U. A study on rehabilitation of structurally distressed reinforced concrete beams using ferrocement jacket-

ing. (Prof N K Adimunthy), Department of Civil Engineering, Kakatiya University, Warangal.

4. Samadhiya, Narendra Kumar. Influence of anisotropy and shear zones on stability of caverns. Department of Civil Engineering, University of Roorkee, Roorkee.

Mechanical Engineering

1. D Prabhakaran. Growth of Bi-2212 and Bi-2223 bulk textured and single crystal superconductors and their characterisation. (Dr C Subramanian), Department of Mechanical Engineering, Anna University, Chennai.

Polymer Sciences

1. Lynta Job. Studies on adhesives for bonding rubber to rubber and rubber to textiles. (Dr Rani Joseph), Department of Polymer Sciences, Cochin University of Science and Technology, Kochi.

MATHEMATICAL SCIENCES

Mathematics

1. Govinder Nath. Three dimensional hydro-dynamic flows past porous surface. Department of Mathematics, Himachal Pradesh University, Shimla.

2. Kango, Sanjay Kumar. Instabilities in non-newtonian fluids. Department of Mathematics, Himachal Pradesh University, Shimla.

3. Mukundrao, Pawar Madhukar. Symmetricity and enumeration in posets. (Dr N K Thakare), Department of Mathematics, North Maharashtra University, Jalgaon.

4. Sharma, Samriti. Fuzzy ideals of rings with group action on them and fuzzy ideals of group graded rings. Department of Mathematics, Himachal Pradesh University, Shimla.

5. Verma, Rajesh Kumar. On problems of flood waves in the river Ganga and its tributaries in Bihar. Department of Mathematics, Himachal Pradesh University, Shimla.

Statistics

1. Ram Pal. Sequential techniques in survival analysis. (Prof Ranji Tiwari and Dr Rahul Gupta), Department of Statistics, University of Jammu, Jammu.

PHYSICAL SCIENCES

Applied Chemistry

1. Iraqi, Eram. Analytical studies of organic and inorganic pollutants. (Dr Ali Mohammad), Department of Applied Chemistry, Aligarh Muslim University, Aligarh.

Biochemistry

1. Bhalsing, Sanjivani Rohidas. In vitro culture, regeneration and extraction of solasodine from solanum khasianum. (Dr V L Maheshwari), Department of Biochemistry, North Maharashtra University, Jalgaon.

2. Rao, Praveen J. Calmodulin mediated regulation of fungal growth and metabolism: Studies on aflatoxin production by aspergillus parasiticus. (Prof C Subramanyam), Department of Biochemistry, Osmania University, Hyderabad.

Chemistry

1. Bansal, Deepa. Physical-chemical studies of micellar systems. (Prof Kabiruddin S N), Department of Chemistry, Aligarh Muslim University, Aligarh.

2. Firoz, Jamal. Synthesis, spectral and chemical studies of modified steroids. (Prof Shafiullah Sir Ziauddin Hall), Department of Chemistry, Aligarh Muslim University, Aligarh.

3. G V S Dhanvantari. Some new analytical applications of cacotheline. Department of Chemistry, Andhra University, Waltair.

4. Kanavi, Prakash Shankarappa. Physico chemical studies of metal complexes of substituted diphenylcarbazones. (Dr A

H M Siddalingaiah), Department of Chemistry, Karnatak University, Dharwad.

5. Laxman Patil Shamkant. Synthesis and characterization of biodegradable polymers. (Dr U R Kapadi and Dr D G Hundiwale), Department of Chemistry, North Maharashtra University, Jalgaon.

6. Maity, Saroj. Laser spectroscopic study of effect of surfactant on gelatin in gel transition dynamics. (Dr H B Bohidar), Department of Chemistry, Jawaharlal Nehru University, New Delhi.

7. Nagarajan, M. A novel approach to macrolactonisation and its application towards the synthesis of biologically active macrolides. (Dr A V Rama Rao), Department of Chemistry, Osmania University, Hyderabad.

8. Narahari Babu, A. New syntheses of benzimidazoles benzodiazocines, benzothiazoles and benzotriazepines. (Dr P Hanumanthu), Department of Chemistry, Osmania University, Hyderabad.

9. Rawat, Jaya. Physico-Chemical studies on metallic corrosion inhibitor. (Dr M A Quraishi), Department of Chemistry, Aligarh Muslim University, Aligarh.

10. Sharma, Kuldip Kumar. Thermo-analytical studies of some solid co-ordination compound. (Prof M L Kaul and Dr B L Sharma), Department of Chemistry, University of Jammu, Jammu.

11. Sylesh Kumar V. Asymmetric total synthesis of some C-17 polyacetylene alcohols. (Dr A V Rama Rao), Department of Chemistry, Osmania University, Hyderabad.

12. Thippeswamy D. Studies directed toward the synthesis of amphidinolide B. (Dr T K Chkarborty), Department of Chemistry, Osmania University, Hyderabad.

13. Verma, Ritu. Studies on some novel metal complexes involving chelating molecules. Department of Chemistry, Rani Durgavati Vishwavidyalaya, Jabalpur.

Physics

1. Dubey, Sushil Kumar. Study of daily variation in cosmic ray intensity. Department of Physics, Rani Durgavati Vishwavidyalaya, Jabalpur.

2. Gundimella Yatiraja Kumara Swamy. X-ray crystallographic studies on compounds of biological interest. (Dr K Ravikumar), Department of Physics, Osmania University, Hyderabad.

3. Prasad, C R K. Study of fieldbuses and development of ASIC based PCI compatible profibus controllers. (Prof J Rama Chander), Department of Physics, Kakatiya University, Warangal.

4. Sahu, Basant Kumar. Preparation of (ZnCd)S mixed phosphors for mechano-optico transducers. Department of Physics, Rani Durgavati Vishwavidyalaya, Jabalpur.

5. Sarma, Chervela Srinivasa. On the investigation of F-centre thermal stability through HF and VHF ultrasonic perturbation in alkali halides. (Prof K Rama Reddy), Department of Physics, Osmania University, Hyderabad.

6. Sullerey, Richa. Theoretical studies on the characteristics of P-N junction solar cells operated under concentrated sunlight. Department of Physics, Rani Durgavati Vishwavidyalaya, Jabalpur.

7. Tiwari, Rajendra Kumar. Theoretical studies on the phenomena associated with the deformation of coloured alkali halide crystals. Department of Physics, Rani Durgavati Vishwavidyalaya, Jabalpur.

Toxicology

1. Karojia, Raj Kamal. Chromium induced reproductive impairment in female rats. (Dr R C Murthy and Dr S B Vohra), Department of Toxicology, Jamia Hamdard, New Delhi.

CLASSIFIED ADVERTISEMENTS

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Professor : Rs. 16400-450-20900-500-22400

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Professor :

- (1) Agricultural Economics (One post)
- (2) Entomology (One post)
- (3) Plant Physiology (One post)

Reader :

- (4) Agricultural Chemistry (One post)
- (5) Agricultural Economics (Two posts)
- (6) Animal Husbandry & Dairying (One post)
- (7) Genetics & Plant Breeding (Cytogenetics) (One post)
- (8) Physics & Mathematics-Deptt. of Farm Engg. (One post)

FACULTY OF SCIENCE

Professor :

- (9) Botany (One post)
- (10) Botany (Ecological Physiology) Under CAS; (One post)
- (11) Botany (Plant Ecology) (One post)
- (12) Chemistry (One post)
- (13) Chemistry (Physical) (One post)
- (14) Geography (One post)
- (15) Geography (Integrated Area Development) (One post)
- (16) Agricultural Geography-Under SAP (One post)
- (17) Home Science-Mahila Mahavidyalaya (One post)
- (18) Mathematics (One post)
- (19) Physics (Two posts)
- (20) Physics (Nuclear Experimental Physics) (One post)
- (21) Physics (Theoretical Physics)-Under CAS (One post)
- (22) Statistics (Two posts)
- (23) Zoology (One post)
- (24) Zoology (Cytogenetics) (One post)
- (25) Zoology (Cytogenetics/Cell Physiology/Biochemistry)-Under CAS (One post)

Reader :

- (26) Botany (Three posts)
- (27) Botany (Molecular Biology) (One post)
- (28) Botany-Mahila Mahavidyalaya (One post)
- (29) Reader/Lecturer in Biotechnology (Spl. in Tissue Culture (Plant/Animal/Immunol-

ogy/Microbiology (Industrial Microbiology/Bacterial Genetics/Enzymology & Enzyme Engg.)-School of Biotechnology (One post)

- (30) Chemistry (Physical) (Three posts)
- (31) Analytical Chemistry (One post)
- (32) Inorganic Chemistry (One post)
- (33) Inorganic Chemistry (Spl. in Structural Inorganic Chemistry/Solid State Chemistry) (One post)
- (34) Organic Chemistry (Two posts)
- (35) Geography (One post)
- (36) Geography-Mahila Mahavidyalaya (One post)
- (37) Geology (Two posts)
- (38) Geology (Petrology/Fuel Geology) (One post)
- (39) Geophysics (Two posts)
- (40) Home Science-Mahila Mahavidyalaya (One post)
- (41) Mathematics (Six posts)
- (42) Mathematics (Spl. in Modern Areas of Pure Mathematics) (One post)
- (43) Physics (Seven posts)
- (44) Physics (Spectroscopy) (One post)
- (45) Statistics (Applied Statistics/Operational Research/Demography) (One post)
- (46) Zoology (Two posts)

FACULTY OF ARTS

Professor :

- (47) Arabic (One post)
- (48) English (Contemporary Literature) (One post)
- (49) Hindi (One post)
- (50) History of Arts (One post)
- (51) History of Arts (Aesthetics) (One post)
- (52) Journalism (One post)
- (53) Library Science (One post)
- (54) Library & Information Science (Experience in Modern Technique of Library Science) (One post)
- (55) Philosophy (Two posts)
- (56) Sanskrit (One post)

Reader :

- (57) Ancient Indian History Culture & Archaeology (Two posts)
- (58) Archaeology (One post)
- (59) A.I.H.C. & Arch. (South East Asia) (One post)
- (60) Ancient Indian History Culture & Archaeology-Mahila Mahavidyalaya (One post)
- (61) History of Science & Technology-Deptt. of AIHC & Arch. (One post)
- (62) English (Three posts)
- (63) Hindi (Four posts)

(64) Hindi (Linguistic/Language Teaching) (One post)

(65) Hindi-Mahila Mahavidyalaya (One post)

(66) Journalism & Mass Communication (Spl. in Communication, Research Preparation of Teaching Materials, Seminar, etc) (One post)

(67) Linguistics (One post)

(68) Philosophy (Two posts)

(69) Philosophy (Modern Symbolic Logic/ Navya Nyaya) (One post)

(70) Philosophy (Saivya Sidhanta) (One post)

(71) Philosophy-Mahila Mahavidyalaya (One post)

(72) Physical Education (One post)

(73) Sanskrit (One post)

(74) Telugu (Two posts)

FACULTY OF SANSKRIT VIDYA DHARMA VIGYAN

Professor :

(75) Professor (S.V.D.V.) (One post)

Reader :

(76) Dharmashastra (One post)

(77) Jain Baudh Darshan (One post)

(78) Jyotish (Two posts)

(79) Mimamsa (One post)

(80) Veda (One post)

(81) Vedic Research (One post)

(82) Vedant (Deptt. of Vaidic Darshan) (One post)

(83) Vyakaran (One post)

FACULTY OF COMMERCE

Professor :

(84) Commerce (Two posts)

Reader :

(85) Commerce (Two posts)

FACULTY OF LAW

Professor :

(86) Law (Three posts)

Reader :

(87) Law (Six posts)

FACULTY OF SOCIAL SCIENCES

Professor :

(88) Economics (One post)

(89) Economics (Economic Planning/International Trade) (One post)

(90) Economics (Growth Centre) (One post)

(91) History (One post)

(92) Political Science (Two posts)

Reader :

(93) Economics (Two posts)

(94) Economics (Macro-Economics) (One post)

(95) Economics-Mahila Mahavidyalaya (One post)

(96) History (Three posts)

(97) History (Ancient Indian History) (One post)

(98) History (Medieval Indian History) (One post)

(99) Political Science (Five posts)

FACULTY OF VISUAL ARTS

Professor :

(100) Applied Arts (One post)

(101) Painting (One post)

Reader :

(102) Applied Arts (One post)

(103) Plastic Arts-Dept. of Plastic Arts (One post)

(104) Textile Design-Dept. of Painting (One post)

FACULTY OF MANAGEMENT STUDIES

Professor :

(105) Management Studies (Two posts)

Reader :

(106) Management Studies (Four posts)

INSTITUTE OF TECHNOLOGY

Professor :

(107) Biomedical Engg. (Bio-Transportation/ Biomechanics) (One post)

(108) Biochemical Engg. (Enzyme Engg./Bio-conversion) (One post)

(109) Chemical Engg. (Two posts)

(110) Chemical Engineering (Spl. in Computer Aided Plant Design & System Engg.) (One post)

(111) Civil Engineering (Two posts)

(112) Civil Engineering (Environmental Engineering) (One post)

(113) Mechanical Engg. (Thermal Engg.) (One post)

(114) Pharmaceutics (One post)

(115) Pharmacology (One post)

Reader :

(116) Chemical Engg. (Transfer Process Reaction Engg./Thermodynamics/Design) (One post)

(117) Chemical Engg. (Industrial Pollution and Water Treatment/Environmental Engineering) (One post)

(118) Chemical Engg. (Organic Technology/ Polymer Technology) (One post)

(119) Civil Engg. (Environmental Engg.) (One post)

(120) Mechanical Engineering (Production Engg.) (One post)

(121) Mechanical Engg. (Engg. Drawing) (One post)

(122) Mechanical Engg. (Turbo Machinery) (One post)

(123) Mechanical Engg. (Thermal Engg.) (One post)

(124) Mechanical Engg. (Machine Design) (Two posts)

(125) Mining Engg. (Coal Mining) (One post)

(126) Mining Engg. (Mine Machinery) (One post)

(127) Mining Engg. (Open Cast Mine) (One post)

(128) Metal Mining & Surveying (One post)

(129) Mining Geology (One post)

(130) Mine Surveying (One post)

(131) Pharmaceutics (One post)

(132) Pharmacognocny (One post)

(133) Pharmacology (Two posts)

Professor :

(134) Applied Chemistry (One post)

(135) Applied Mathematics (One post)

(136) Applied Physics (One post)

Reader :

(137) Applied Chemistry (Two posts)

(138) Applied Mathematics (Two posts)

(139) Applied Physics (One post)

(140) Analytical Chemistry (Deptt. of Pharmaceutics) (One post)

(141) Applied Geology (Deptt. of Civil Engg.) (One post)

FACULTY OF EDUCATION

Professor :

(142) Education (Two posts)

Reader :

(143) Education (Three posts)

FACULTY OF PERFORMING ARTS

Professor :

(144) Music (Instrumental) (One post)

(145) Musicology (One post)

(146) Vocal Music (One post)

Reader :

(147) Musicology (One post)

INSTITUTE OF MEDICAL SCIENCES

FACULTY OF MEDICINE

Professor :

(148) Bio-Physics (One post)

(149) Cardiology (One post)

(150) Cardiothoracic Surgery (One post)

(151) Dental Surgery (One post)

(152) General Surgery (Two posts)

(153) Microbiology (Two posts)

(154) Obst. & Gynaecology (One post)

(155) Oto-Rhino-Laryngology (One post)

(156) Ophthalmology (One post)

(157) Paediatrics (One post)

(158) Plastic Surgery (One post)

(159) Preventive & Social Medicine (One post)

(160) Community Medicine (One post)

(161) Pathology (Immuno-Pathology) (One post)

(162) Pathology (One post)

(163) Physiology (Neuro-Physiology) (One post)

(164) Radiology (One post)

(165) Radiotherapy & Radiation Medicine (Two posts)

(166) Tuberculosis & Chest Diseases (One post)

Reader :

(167) Anatomy (One post)

- (168) Anatomy (Teratology) (One post)
- (169) Cardiology (Two posts)
- (170) Dental Surgery (One post)
- (171) E.N.T. (One post)
- (172) Forensic Medicine (One post)
- (173) Gastro-enterology (One post)
- (174) General Medicine (Two posts)
- (175) General Surgery (Two posts)
- (176) Neuro Surgery (One post)
- (177) Neurology (One post)
- (178) Obst. & Gynaecology (One post)
- (179) Obst. & Gynaecology (Social Obstetrics) (One post)
- (180) Obst. & Gynaecology (P.P.P.) (One post)
- (181) Orthopaedics (Two posts)
- (182) Ophthalmology (One post)
- (183) Paediatrics (Rural Child Health) (One post)
- (184) Pathology (Three posts)
- (185) Pathology (Haematology & Blood Bank) (One post)
- (186) Physiology (One post)
- (187) Pharmacology (One post)
- (188) Pharmaceutical Chemistry (Dept. of Pharmacology) (One post)
- (189) Psychiatry (One post)
- (190) Biological Psychiatry (One post)
- (191) Clinical Psychology (Dept. of Psychiatry) (One post)
- (192) Skin & V.D. (One post)

MOLECULAR BIOLOGY UNIT :

- (193) Professor of Biochemistry (Membrane Biochemistry) (One post)

COMPUTER CENTRE :

- (194) Reader-Computer Science Application (One post)

A) QUALIFICATIONS (For post Nos. 1-106 and 134-141 & 194)

For Professors

An eminent scholar with published work of high quality, actively engaged in research with 10 years of experience in postgraduate teaching, and/or experience in research at the University/National Level institutions, including experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

In exceptional cases, the teachers with 15 years of UG teaching/research experience may also be considered.

For Readers

- i) Good academic record with a doctoral degree or equivalent published work. In addition to these, candidates who join from outside the University system, shall also pos-

sess at least 55% of the marks or an equivalent grade of B in the 7 point scale with letter grades O, A, B, C, D, E & F at the Master's degree level.

- ii) Five years of experience of teaching and/or research excluding the period spent for obtaining the research degrees and has made some mark in the areas of scholarship as evidenced by quality of publications, contribution to educational innovation, design of new courses and curricula.

B) QUALIFICATIONS (Post Nos. 107-133)

For Professors :

An eminent scholar with published work of high quality, actively engaged in research. 10 years experience of teaching and/or research. Experience of guiding research at doctoral level.

OR

An outstanding Engineer/Technologist with established reputation who has made significant contribution to knowledge.

For Readers

A good academic record with a doctor's degree in the relevant field. About 5 years experience of teaching and/or research and development.

Provided further that candidates not possessing Ph.D. may be considered if they have to their credit equivalent research published work or design or development work of a high order either in the Institution or in an Industry.

OR

In the case of persons to be recruited from industry or from professional field, candidate should possess good academic record with recognised professional work of about 7 years which includes innovation and/or research and development.

C) QUALIFICATIONS (Post Nos. 142-147)

For Professors :

An eminent scholar with published work of high quality, actively engaged in research with 10 years of experience in postgraduate teaching and/or research at University National Level Institutions, including experience of guiding research at doctoral level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

For Readers

Good academic record with a doctoral degree or equivalent published work. Candidate from outside the University system in addition shall also possess at least 55% marks or an equivalent grade at the mas-

ters' level. Eight years experience of teaching and/or research including upto 3 years for research degrees and has made some mark in the areas of scholarship as evidenced by quality of publications, contribution to educational renovation design of new courses and curricula.

D) QUALIFICATIONS (For Professors & Readers) (For post Nos. 148-192)

For post No. 148 : (1) MD (Biophysics)/M.Sc. (Biophysics or Medical Biochemistry) with Ph.D. (Biophysics)/MD (Physiology) or MD (Biochemistry) with one year training in Biophysics; **149 & 169 :** (1) DM (Cardiology). **150 :** (1) M.Ch. (Cardiovascular & Thoracic Surgery)/M.Ch. (Cardiac Surgery)/M.Ch. (Vascular Surgery)/M.Ch. (Thoracic Surgery). **151 & 170 :** (1) MDS. **152 & 175 :** (1) MS (Surgery)/MS (Gen. Surgery). **153 :** (1) MD. (Bacteriology)/MD (Microbiology)/MBBS with M.Sc. (Medical Bacteriology)/M.Sc. (Medical Microbiology)/Ph.D. (Medical Bacteriology)/M.Sc. (Medical Bacteriology) with Ph.D. (Medical Bacteriology)/M.Sc. (Medical Bacteriology) with D.Sc. (Medical Bacteriology)/M.Sc. (Medical Microbiology) with Ph.D. (Microbiology)/M.Sc. (Medical Microbiology) with D.Sc. (Medical Microbiology). **154 & 178-180 :** (1) MD (Obst. & Gyn.)/MS (Obst. & Gyn.). **155 & 171 :** (1) MS (Oto-Rhinolaryngology). **156 & 182 :** (1) MS (Ophthalmology)/MD (Ophthalmology). **157 & 183 :** (1) MD (Paediatrics). **158 :** (1) M.Ch. Plastic Surgery). **159 & 160 :** (1) MD (Social & Preventive Medicine)/MD (Community Medicine). **161, 162, 184 & 185 :** (1) MD (Pathology)/Ph.D. (Pathology)/D.Sc. (Pathology). **163 & 186 :** (1) MD (Physiology)/MBBS with M.Sc. (Physiology)/M.Sc. (Medical Physiology) with Ph.D. (Medical Physiology)/M.Sc. (Medical Physiology) with D.Sc. (Medical Physiology). **164 :** (1) MD (Radio-Diagnosis)/MD (Radiology)/MS (Radiology). **165 :** (1) MD (Radiotherapy)/MD (Radiology)/MS (Radiology). **166 :** (1) MD (Tuberculosis)/MD (TB & Respiratory Diseases)/MD (Medicine) with TDD, DTD or DTCD/MD (TB & Chest Diseases). **167 & 168 :** (1) MS (Anatomy)/MD (Anatomy)/MBBS with M.Sc. (Anatomy)/M.Sc. (Medical Anatomy) with Ph.D. (Medical Anatomy)/M.Sc. (Medical Anatomy) with D.Sc. (Medical Anatomy). **172 :** (1) MD (Forensic Medicine). **173 :** (1) DM (Medical Gastro-enterology)/DM (Gastro-enterology)/MD (Medicine) or MD (Paediatrics) with 2 years spl. training in Gastro-enterology. **174 :** (1) MD (Medicine)/MD (Gen. Medicine). **176 :** (1) M.Ch. (Neuro-surgery). **177 :** (1) DM (Neurology). **181 :** (1) MS (Orthopaedics). **187 :** (1) MD (Pharmacology)/MBBS with Ph.D. (Medical Pharmacology)/M.Sc. (Medical Pharmacology) with Ph.D. (Medical Pharmacology)/M.Sc. (Medical Pharmacology) with D.Sc. (Medical Pharmacology). **188 :** (1) i) M.Pharm. ii) Good

academic record with a doctoral degree of equivalent published work. Candidate from outside the University system in addition shall also possess atleast 55% marks or an equivalent grade at the master's level. Eight years experience of teaching and/or research including upto 3 years for research degrees and has made some mark in the areas of scholarship as evidenced by quality of publications, contribution to educational renovation design of new courses and curricula. 189 & 190 : MD (Psychiatry)/MD (Psychological Medicine)/MD in Medicine with Diploma in Psychological Medicine. 191 : (i) A first or second class Master's Degree in Psychology. (ii) Diploma in Medical & Social Psychology (DM & SP)/M.Phil in Clinical Psychology; and (iii) Ph.D. in Clinical Psychology (iv) Eight years experience of teaching and/or research including upto three years for research degrees and has made some marks in the areas of scholarship as evidenced by quality of publications, contribution to educational renovation, design of new courses and curricula. 192 : (1) MD (Dermatology & Venereology)/MD (Derm. Ven. & Leprosy)/MD (Dermatology)/MD (Derm. including Ven.)/MD (Derm. including Ven./Lep.)/MD (Medicine) with DVD or DD. 193 : (1) MD (Biochemistry)/MBBS with M.Sc. (Med. Biochemistry)/M.Sc. (Med. Biochemistry) with Ph.D. (Med. Biochemistry) or Ph.D. (Biochemistry)/M.Sc. (Med. Biochemistry) with D.Sc. (Med. Biochemistry)/M.Sc. (Biochemistry) with Ph.D. (Med. Biochemistry) or Ph.D. (Biochemistry) from Medical Faculty.

For post Nos. 148-166 & 193 (Except post Nos. 149, 150 & 158) : (2) Teaching experience as Associate Professor/Reader in the concerned subject for 4 years in a recognised Medical College.

For post Nos. 149, 150 & 158 : (2) Teaching experience as Associate Professor/Reader in the concerned subject for 4 years in a recognised Medical College/Teaching Institution.

Desirable (For Professors) : Minimum of 4 research publications indexed in Index Medicus/National Journals and one research publications in International Journal.

For post Nos. 167-192 (Except post Nos. 169, 173, 176 & 177) : (2) Teaching experience as Assistant Professor/Lecturer in the concerned subject for 5 years in a recognised Medical College.

For post Nos. 169, 173, 176 & 177 : (2) Teaching experience as Assistant Professor/Lecturer in the concerned subject for 2 years in a recognised Medical College/Teaching Institution.

Desirable (For Readers) (Except post Nos. 188 & 191) : Minimum of 4 research publications indexed in Index Medicus/National Journals.

REGISTRAR

APPLICATION FORM FOR TEACHING POSTS

(To be submitted in FOUR SETS on plain paper of 28 x 23 cm size)

Post Applied for :

Advertisement No. :

Particulars of fee remitted

a) SBI Draft/Bankers Cheque No.

b) Date : c) Amount : Rs..... (Rs..... for SC/ST)

Indicate Advt. & Sl. No., if applied earlier for the post of

1. Name
2. Present Designation & Address
3. Address for correspondence (with Pin Code)
Telephone No. (with STD Code)
Fax No.
4. Permanent Address (with Pin Code)
5. Present Emoluments
6. Father's/Husband's Name
7. Date & Place of Birth
8. Sex
9. Marital Status
10. Whether belongs to SC/ST
11. Nationality
12. Academic Records — Matriculation onwards (Examination; University/Board; Year; Subjects; Percentage of marks; Division) (Attach attested photocopies of marksheets & certificates)
13. Distinctions/Prize/Medal/Award/Honours
14. Field of specialisation
15. Appointments held : (Designation; Grade; Name of Employer; Date of joining/leaving; Reason for leaving) (Attach supporting documents)
16. a) Teaching Experience (in years)- Postgraduate : Undergraduate :
b) Research Experience (in years)- Doctoral : Post-doctoral :
c) Experience of guiding research- Years : No. of Ph.Ds. produced :
17. Publications : (published/in press/accepted) (List of publication to be attached)
18. Research Projects (in hand/completed)
19. Conferences/Seminars attended/papers presented
20. Additional Information
21. CERTIFICATE

Affix recent
passport size
photograph with
signature

I certify that (i) the information given is correct. (ii) I have never been dismissed from service nor convicted for any offence. No criminal case is pending against me. (iii) In case of concealment of any fact(s), my application is liable to be rejected/employment terminated.

Date :

Signature of the Applicant

22. Endorsement by Employer

BANARAS HINDU UNIVERSITY VARANASI-221 005

Advertisement for the Teaching Positions of the Faculty of Ayurveda

(Advertisement No. 2/1999-2000)

Applications are invited for the undermentioned posts of Professors and Readers in the Faculty of Ayurveda, Institute of Medical Sciences. The posts at Sl. Nos. 1, 2, 5, 6 & 8 were advertised earlier vide Advt. No. 3/1997-98. Those who had applied earlier for these posts

in response to the above advertisement are required to apply afresh. However, they will be exempted from the payment of application fee. Application should be made in four sets on the prescribed format. Application complete in all respect alongwith the prescribed fee must reach the Registrar, Selection Committee Section, Banaras Hindu University, Varanasi-221 005 (India) on or before 31st December, 1999 (15th January, 2000 in case of application from abroad).

For information with regard to submission of applications, prescribed fee, format

of application and other instructions, the Advt. No. 1/1999-2000 of the University be referred to.

Professor : (Rs. 16400-450-20900-500-22400)

- (1) Prasuti Tantra-Stree Roga/Bala Roga — One post
- (2) Rasa-Shastra (Spl. Rasa-Shastra & Bhaishajya Kalpa) — One post
- (3) Kayachikitsa (Chikitsa/Manas Roga/Vikriti Vigyan) — One post
- (4) Shalya — One post
- (5) Medicinal Chemistry (Spl. in Organic Chemistry/Phytochemistry/Inorganic Chemistry/Analytical Chemistry/Bio-Chemistry and Pharmaceutical Chemistry) — One post

Reader : (Rs. 12000-420-18300)

- (6) Ayurveda Samhita — One post
- (7) Vikriti Vigyan-Deptt. of Kayachikitsa — One post
- (8) Medicinal Chemistry (Spl. in Organic Chemistry/Phytochemistry/Inorganic Chemistry/Analytical Chemistry/Bio-Chemistry and Pharmaceutical Chemistry) — One post

Qualifications : (Post Nos. 1 to 4 & 6 to 7)

1. AMS/ABMS or an equivalent qualification in Ayurveda recognised by the University.
2. D.Ay.M./M.D.(Ay.)/Ph.D. or an equivalent postgraduate qualification in the subject.
3. **A. For Professors**

An eminent scholar with published work of high quality, actively engaged in research, with 10 years of experience in postgraduate teaching and/or experience in research at the University/National Level Institution, including experience of guiding research at Doctoral Level.

OR

An outstanding scholar with established reputation who has made significant contribution to knowledge.

In exceptional cases the teachers with 15 years of undergraduate teaching/research experience may also be considered.

B. For Readers

Good academic record with a doctoral degree or equivalent published work. In addition to these the candidates who join from outside the University system, shall also possess atleast 55% of the marks or an equivalent grade of 'B' in the seven point scale with the letter grade — O, A, B, C, D, E & F at the Master's Degree Level.

Five years of experience of teaching and/or research excluding the period spent for ob-

taining the research degree and has made some mark in the areas of scholarship as evidenced by quality of publication, contribution to educational innovation, design of new courses and curricula.

Qualification (Post No. 5)

As per qualification shown under item 3A. for the post of Professor.

Qualification (Post No. 8)

As per qualification shown under item 3B. for the post of Reader.

REGISTRAR

PUNJAB AGRICULTURAL UNIVERSITY LUDHIANA

ADVERTISEMENT NO. 2/99

Applications from the eligible candidates are invited to fill up the post of Director of Research in the pay scale of Rs. 16400-450-20900-500-22400- plus Rs. 1000/- p.m. Special Allowance and rent free accommodation for a tenure of four years on the prescribed application form obtainable from the Asstt. Registrar (R), PAU, Ludhiana on payment of Rs. 150/- either in cash at the counter or by sending Bank Draft in favour of the Comptroller, PAU, Ludhiana alongwith self-addressed envelope (28 x 12 cms) bearing postage stamps of Rs. 12/-. The duly completed application form with prescribed fee of Rs. 500/- in the form of Bank Draft payable to the Comptroller, PAU, Ludhiana should reach the Registrar, PAU, Ludhiana by 28.12.1999.

Outside candidates can be taken on deputation. Applications which are incomplete or received after the due date shall not be considered. Inservice candidates should apply through proper channel.

Qualifications :

Essential :

- i) Second class Bachelor's degree in Science, Agriculture or Allied Sciences.
- ii) Ph.D. in any branch of Agricultural Science.
- iii) At least 15 years teaching/research/extension experience out of which at least 8 years experience should be as Professor or equivalent with evidence of having conducted research work independently in any branch of agricultural science and published its results in scientific journals of repute.
- iv) Experience in organising, supervising and coordinating scientific research in some field of agriculture. Should have recognised reputation for vision, initiative and ability to cooperate with other research workers. Should have displayed leader-

ship ability and the capacity to organise and supervise work of others.

- v) Matric level certificate of Punjabi language. (If not, the candidate is required to pass the same within one year of appointment).

Note : 'Agriculture' includes the basic and applied science of soil and water management, crop and livestock production and management, home sciences and the betterment of rural people.

REGISTRAR

PUNJAB AGRICULTURAL UNIVERSITY, LUDHIANA

CORRIGENDUM TO ADVERTISEMENT NO. 1/99

Apropos Advertisement No. 1/99 published in the journal "University News", New Delhi on 02.08.99 inviting applications for various posts by 31.08.99. The qualifications for these posts were sent to the candidates alongwith the application forms.

I. Sub para (ii) and (iii) of the essential qualifications for the post of Dean, Postgraduate Studies may be read as under :

- (ii) Ph.D. in any discipline of Agril. Science/Basic Sciences & Humanities/Vety. Science/Home Science/Engineering with good academic record.
- (iii) Twelve years experience in Agril. Science/Basic Sciences & Humanities/Vety. Science/Home Science/Engineering in a College/Institution out of which atleast three years must be as Professor/equivalent.

II. Sub para (i) of the essential qualifications for the post of Dean, College of Basic Sciences & Humanities may be read as under :

- (i) Graduate in any discipline atleast with second division.

III. The following Note may also be read as part of the qualifications for the posts of Scientist (Soil & Water Engineering) at Ropar and Research Engineer (Farm Power & Machinery) :

Note : The condition of Ph.D. at Sr. No. (i) will be relaxable in the case of candidates with eight years experience in teaching/research/extension education who have obtained OCPA of 6.50/10.00 or 65% marks in Master's degree in Engineering with specialisation in the relevant field with good academic record.

The last date for receipt of applications for the above mentioned four posts is extended up to 20.12.1999.

REGISTRAR



United World Colleges

SELECTIONS 2000

Applications are invited for September 2000 entry to the United World Colleges situated in Canada, Hong Kong, India, Italy, Norway, Singapore, Swaziland, U.K., USA and Venezuela.

The United World Colleges provide a 2-year pre-university educational programme leading to the International Baccalaureate (IB) Diploma which is recognised as an equivalent to the completion of Grade XII by the Association of Indian Universities offer an international, co-educational residential environment for students from over 100 countries aim to further international understanding by making education a force to unite nations and people.

Entry to the Colleges is based solely on merit judged independently by way of application criteria and interview. A number of places are offered to overseas United World Colleges and to the Mahindra United World College of India.

The Simon Bolivar United World College of Agriculture, Venezuela, offers a 3-year programme from mid-September to end-July. It promotes an integral view of agricultural production and seeks to strengthen an obligation towards rural development and environmental issues.

The Waterford KaMhlaba UWC of Southern Africa, Swaziland offers the IB : its term extending from January to November. Applications must be received not later than **30th November, 1999.**

To apply to any UWC, candidates must be of Indian origin, should be born on or between 1st September 1982 and 28th February 1985 and should have appeared or due to appear for Grade X Examinations of a recognised Board by March/April 2000.

Interested applicants should write for forms to : **United World Colleges, Indian National Committee, Mahindra Towers, Ground Floor, Road No. 13, Worli, Mumbai-400 018. Tel. Nos. 497 4625/496 1663-68.**

Please enclose a demand draft/cheque of Rs. 200/- drawn in favour of "The Mahindra United World College of India", payable in Mumbai and a self-addressed envelope (24 cm x 11 cm) affixed with a Rs. 15/- stamp.

Applications must reach on or before **15th February 2000.** Late applications will not be accepted.



INDIRA GANDHI NATIONAL OPEN UNIVERSITY

MASTERS IN TOURISM MANAGEMENT

ADMISSION NOTIFICATION FOR JANUARY, 2000 SESSION

The Masters in Tourism Management Programme of IGNOU has been developed keeping in view the needs of the fast developing tourism industry. The aim is to train managers to meet the tourism industry requirements. It is useful to all those who are already employed in any branch of tourism industry like travel agencies, tour operations, hotels and other tourism organisations etc. alongwith those who intend to take managerial jobs or make a career in the tourism industry. It will be also useful for entrepreneurs and researchers in this area. The programme has been designed by experts from the tourism industry, management and academicians and is offered through distance learning from 122 study centres spread all over India. A special feature of this programme is that students can study as per their own pace without affecting their work and duty. The courses in this programme include, HRD in Tourism, Designing Tourism Products, Tourism Marketing, Tourism Operations, Planning and Impacts, Management Functions, MICE, Information Systems and Management and Financial Management in Tourism etc.

Duration : Minimum 2 years, maximum 4 years.

Admission eligibility:

Category 1 : BTS*, BA in Tourism and those students who have done their graduation in any field plus a Diploma in Tourism which is recognised in the University system or by AICTE.
Fees: Rs. 2500/-** in 1st year and Rs. 2400/- in 2nd year.

**(IGNOU students who are likely to complete BTS in Dec. 1999 can seek provisional admission).*

Category 2 : Bachelor's Degree or a Diploma in Hotel Management.
Fees: Rs. 3700/-** in 1st year and Rs. 2400/- in 2nd year.
However, all students of Category 2 will have to clear four additional courses during their period of study.

Medium of Instruction : English ***(Fees inclusive Rs. 100/- registration fee.)*

Admissions open: 8th November, 1999

Admissions close: 10th December, 1999

Forms can be obtained from all the Regional Centres of IGNOU and IGNOU Students Services Centre, Maidan Garhi, New Delhi-110068, in person, on payment of Rs. 10/- in cash or through post by sending an IPO or Demand Draft of Rs. 50/- drawn in favour of IGNOU payable at New Delhi/at the city of the Regional Centre concerned, from where form is required.

For queries write to or contact: Programme Coordinator (Tourism Studies), Room No. 1, Block-5, School of Social Sciences, IGNOU, Maidan Garhi, New Delhi-110068 (Phone No. 6969342 Fax: 6859189).

DIRECTOR (SR&E)